

DIGITAL
COMBAT
SERIES

PANZER COMMANDER™

WORLD WAR II TANK SIMULATOR

User Manual



PANZER COMMANDER

WORLD WAR II
TANK SIMULATOR



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*On the prowl:
a PzKw V
Panther in
Northern
Europe, 1944.*

■ INTRODUCTION

PANZER COMMANDER is a simulation of World War II tank combat. In PANZER COMMANDER, the attempt has been made to recreate the experience of commanding a German, Soviet, American or British tank in the European, Soviet or North African theaters. More than forty driveable vehicles are available with accurate simulations of weapon, armor, engine and crew performance. PANZER COMMANDER also features German and Soviet campaigns developed from actual unit histories. In addition, PANZER COMMANDER allows you to play networked multiplayer games in head-to-head or cooperative scenarios.

■ GETTING STARTED

To play PANZER COMMANDER, be sure your system meets the following system requirements:

- Pentium 133 MHz IBM PC or compatible (Pentium 166 MHz recommended)
- 16 MB of RAM (32 recommended)
- Windows® 95 - *NOTE: This is a Windows 95 game and cannot be played on Windows® NT systems.* Multitasking is not recommended when playing PANZER COMMANDER
- An Uncompressed hard drive with 130 MB free
- A 4 X CD-ROM drive or faster (8 X Recommended)
- A SVGA video adapter with 2 MB of memory and a Color SVGA Monitor
- For Accelerated Play, a 3-D accelerated card with 4MB of RAM
- A 100% Microsoft (or Logitech) compatible mouse
- Microsoft mouse driver version 9.00 or higher or Logitech mouse driver version 6.24 or higher
- 16 bit DirectX compliant sound card

In addition to the basic system requirements, the game requires that DirectX 5 be installed to your hard drive. The option to install DirectX 5 appears during the game installation. At the end of installation, you will be prompted to register PANZER COMMANDER electronically.

For network play, you need a DirectPlay compatible network adapter.

PANZER COMMANDER also supports hardware acceleration. *Playing PANZER COMMANDER with a 3D Accelerator*

What Comes with this Game?

Your game box should contain a PANZER COMMANDER CD and a hot key card with hot keys and interface information.

Installing the Game

You must install PANZER COMMANDER game files to your hard drive. Insert the PANZER COMMANDER CD in your CD-ROM drive to play this game.

To install the game, insert the CD into the CD-ROM drive. When the CD appears, click on the Install option. If you have disabled CD-ROM auto-play and it does not function, **Explore** the CD and double-click on the Install screen prompts to complete the installation.

Starting the Game

Insert the PANZER COMMANDER CD into your CD-ROM drive. When the CD appears, click on the Install option. For users that have disabled the Windows CD-ROM auto-play, open the PANZER COMMANDER program folder and click on the PANZER COMMANDER icon. For "play" information, please refer to the rest of the manual. Please read the README file to include in this manual. Please read the README file for more information.

Uninstalling the Game

To uninstall the game, choose Settings from the Windows Control Panel. In the Control Panel, select Add/Remove Programs, and click on the Add/Remove button. The game will then be removed from your hard drive, except for your save files.

Saving Games

PANZER COMMANDER requires space on your hard drive to save game files. Each saved game can take up to 1 MB of hard drive space.

Electronic Registration

If you did not register your copy of PANZER COMMANDER electronically, you will be prompted to do so later:

1. From your desktop select the Start button, click on Programs, and click on Register for Free Stuff.
2. Follow all on screen prompts.

Note: If you register electronically, or via the registration code, you will receive a code to unlock an additional American scenario.



*On the front
a PzKw V
Panther in
Northern
Europe, 1944*

II tank combat. In PANZER COMMANDER, the
ence of commanding a German, Soviet,
et or North African theaters. More than
te simulations of weapon, armor, engine
features German and Soviet campaigns
n, PANZER COMMANDER allows you to play
r cooperative scenarios.

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(recommended)

played on Windows® NT systems. Multitasking is not

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er version 6.24 or higher

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DirectX 5 appears during the game
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ble network adapter.

PANZER COMMANDER also supports hardware acceleration through Direct3D. See the sec-
tion *Playing Panzer Commander with a 3D Accelerator* on page 5 for more details.

What Comes with this Game?

Each game box should contain a PANZER COMMANDER CD, this User Manual, and a color
document with hot keys and interface information.

Installing the Game

Copy the PANZER COMMANDER game files to your hard drive and have the PANZER
COMMANDER CD in your CD-ROM drive to play this game.

To install the game, insert the CD into the CD-ROM drive. When the pop-up window
appears, click on the **Install** option. If you have disabled the Windows 95 Autorun, or if
it does not function, **Explore** the CD and double-click on the Setup icon. Follow all on-
screen prompts to complete the installation.

Starting the Game

Insert the PANZER COMMANDER CD into your CD-ROM drive, and select **Play** from the pop-
up window. For users that have disabled the Windows 95 Autorun feature, or if it does
not function, open the PANZER COMMANDER program folder from your Windows 95 Start
button and click on the PANZER COMMANDER icon. For complete and specific "how to
play" information, please refer to the rest of the manual. Some changes were made too
late to include in this manual. Please read the README.TXT file in your game directory
for more information.

Uninstalling the Game

To uninstall the game, choose **Settings** from the Windows 95 Start Button, and select
Control Panel. In the Control Panel, select **Add/Remove Programs**, left-click on **PANZER
COMMANDER**, and click on the **Add/Remove** button. The game and all of its components are
then removed from your hard drive, except for your saved games or edited scenarios.

Saving Games

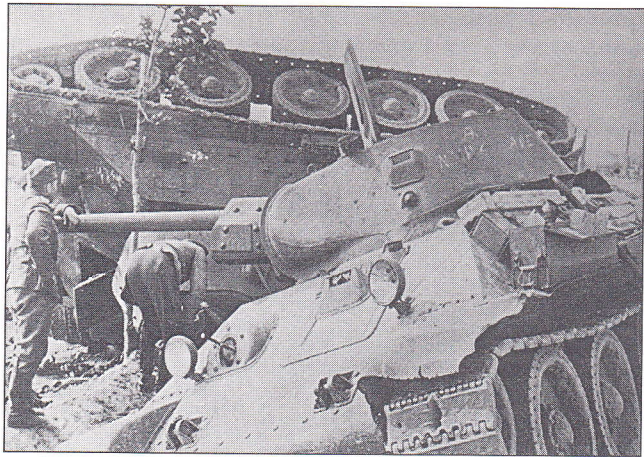
PANZER COMMANDER requires space on your hard drive for saved games and temporary
files. Each saved game can take up to 1 MB of hard drive space.

Electronic Registration

If you did not register your copy of PANZER COMMANDER after installation and wish to do
so later:

1. From your desktop select the Start button, click on Programs, click on PANZER COMMANDER
and click on Register for Free Stuff.
2. Follow all on screen prompts.

Note: If you register electronically, or via the registration card, you will be provided
with a code to unlock an additional American scenario.



A close look at the unexpected German officers inspecting wrecked T-34s.

Electronic Documentation

Included on the game CD is an information document, *Histories of German and Soviet Tank Divisions During World War II*, chronicling the actual careers of several German and Soviet tank units. These real life events are the basis of the campaign games you can play in PANZER COMMANDER. This extensive paper is formatted as an Adobe Acrobat document for maximum readability; it can be read at your computer, or printed out if you have a printer.

If you do not already have the Adobe Acrobat Reader, insert the PANZER COMMANDER CD into the CD-ROM drive and select ACROBAT from the pop-up window. If you have Autorun disabled, go the directory where the game was installed, open the ACROBAT folder, and double-click on the file entitled Ar32e301.exe. Follow the on-screen prompts.

Once Acrobat Reader is installed on your system, you can read *Histories of German and Soviet Tank Divisions During World War II* by choosing PANZER COMMANDER from the Programs panel of your Windows 95 **Start** menu and selecting Read History File. Or, from the File menu of Adobe Acrobat, you may open the document, whose file name is HISTORY.PDF and which is located in the root directory of your game CD.

■ TROUBLESHOOTING

This section provides information that should help you solve some common problems.

Sound and Video Cards

Some sound and/or video cards are not supported by Windows 95 and DirectX. If you do not have one of the following Sound or Video cards, the game may not work.

DirectX Supported Sound Cards: Aztech, Creative Labs, ESS

DirectX Supported Video Cards: 2D: ATI, Cirrus Logic, Matrox, S3, Tseng Labs, Western Digital, 3Dlabs, ATI, Creative Labs, Rendition

DirectX Supported 3D Accelerator Cards: 3Dlabs, Matrox 3D, nVIDIA RIVA 128, ATI Rage Pro, 3D Labs V2200 or V2200.

DirectX 5 Setup

This game requires DirectX 5. If you do not have it, insert the CD. Explore the game CD, and open the README.TXT file to start the DirectX 5 install.

DirectX Disclaimer

PANZER COMMANDER utilizes Microsoft's DirectX sound programming tool created by Microsoft, and the i... problems and system anomalies with computer... DirectX compliant. DirectX is a Microsoft product, a... able for changes that might occur to your computer... DirectX related problems that cannot be fixed by up... Windows 95 driver set, you must contact either Mic... video card for further technical support or service.

Microsoft retains all intellectual property rights to D... a limited license to use DirectX with Microsoft oper...

Verifying DirectX Video / Sound Card Drivers

To verify that your sound and video drivers are Direct...

1. Click on the windows Start button (usually found in t...
2. Click on Run.
3. In the open field type the command: C:\progra-1\din...
4. Make sure all drivers say Certified next to them.

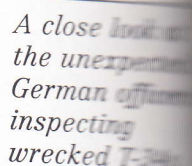
If any of your drivers are not DirectX certified manufacturer and see if they have certified Direct...

Reinstating Windows 95 Video Drivers

If you find that there is a problem with your displa... you can reinstate your old video drivers by followi...

1. Click on the windows Start button (usually found in...
2. Click on Run.
3. In the open field type the command: C:\progra-1\din...
4. Click on the Restore Display Drivers button.

This may require that you have the disk containi...

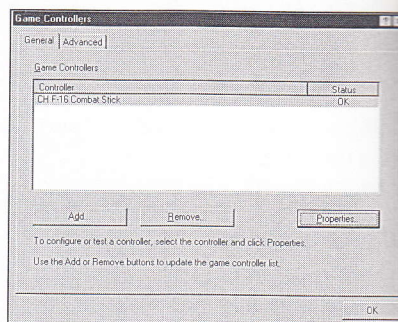


rrus Logic, Matrox, S3, Tseng Labs,
dition

This may require that you have the disk containing your original drivers.

Using a Joystick in PANZER COMMANDER

Thrustmaster and CH joysticks are fully supported by PANZER COMMANDER. Other types of joysticks, throttles and foot pedals can be used if they are properly configured for Windows 95. To check if your controller is configured, open up the Control Panel, and select either the Joystick or Game Controllers icon. If your device is listed under Controllers it should work in PANZER COMMANDER. If your game controller does not appear on this list, you can attempt to configure it for Windows 95 following these instructions:



1. Connect your joystick to the game port.
2. Open up the Control Panel in Windows 95 and select the Joystick or Game Controllers icon.
4. Click on the Add button.
5. Select the style and manufacturer of your joystick or game controller if present.
6. If your controller is not on the list press the Add Other button and search the list for your model. If your model came with driver/configuration software, insert the disk and click on the Have Disk button.
7. When it returns you to the Controller screen, highlight your joystick and press the Properties button to configure it. Follow the on screen directions to establish proper configuration of the x and y axes and any special controls.

If you can't configure your joystick properly in Windows 95, you need to contact the manufacturer of your controller for further technical support. The joystick will not function properly in PANZER COMMANDER if it is not first properly configured in Windows 95.

Playing PANZER COMMANDER with a 3D Accelerator

PANZER COMMANDER supports 3D hardware acceleration using Direct3D. If you have a hardware accelerator, be sure that it supports Direct3D and that you have the latest drivers.

While PANZER COMMANDER supports the widest possible range of 3D accelerators, no one can anticipate every conceivable hardware configuration. If you should experience problems, contact the manufacturer of your 3D accelerator for troubleshooting information. Again, make sure that you have the latest drivers before proceeding.

For best results, an accelerator based on one of the following chip sets is recommended:

3DFX Voodoo or Voodoo RUSH, nVIDIA RIVA 128, ATI Rage Pro, 3D Labs Permedia 2, Rendition Verite V2100 or V2200.



If you have an accelerator based on a different chip set, you may experience compatibility or good performance with PANZER COMMANDER. If you attempt to use any Direct3D-compatible hardware accelerator, when launching the program, you can disable hardware acceleration. Use the Notepad program to edit the file PANZER.INI, which was created when PANZER COMMANDER was installed. Change the line which

PANZER COMMANDER then uses its built-in software rendering. In the Game Options menu, you can disable certain graphics options from the Graphics menu. See Level of Details Settings on page 25, and 3D Acceleration.

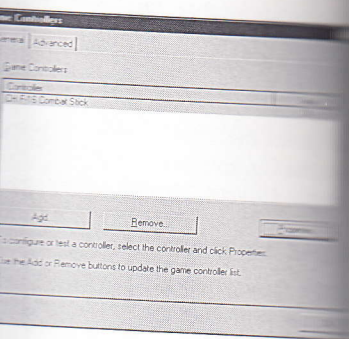
Contacting SSI Technical Support

If you are having problems, please consult the Troubleshooting section before contacting SSI Technical Support. We've encountered many common problems in this area. If you are sure that you have met the system requirements and the game still does not work, please contact us using the latest drivers for your system.

We have a staff of Technical Support Specialists who can help with the problems you may have with any of our games. They can suggest some possible solutions based on the configuration they can suggest some possible solutions.

Because of the millions of different hardware configurations available with today's PCs, you may still have to contact your hardware manufacturer, or software publisher, to see if the game will work before our game will work. You may also need to install video, mouse, or CD-ROM drivers before the game will work.

We suggest contacting SSI Technical Support via e-mail or by phone. Please include a printout of your c:\autoexec.bat file, a printout of the game's readme file, a description of the problem. Please include the operating system and error messages you have seen which indicate the problem.



ect the Joystick or Game Controllers icon.

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d Other button and search the list for
figuration software, insert the disk

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reen directions to establish proper
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support. The joystick will not func-
properly configured in Windows 95.

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Direct3D and that you have the

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ration. If you should experience
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rivers before proceeding.

lowing chip sets is recommended:

T Rage Pro, 3D Labs Permedia 2,



*Prepare for
Battle: KV-1
crew rushes to
man their
tank, 1942*

If you have an accelerator based on a different chip set, there is no guarantee of compatibility or good performance with PANZER COMMANDER. However, the program attempts to use any Direct3D-compatible hardware that you have. If you have problems launching the program, you can disable hardware acceleration by using the Control program to edit the file PANZER.INI, located in the folder where PANZER COMMANDER was installed. Change the line which reads: Accel = TRUE to read: Accel = FALSE

PANZER COMMANDER then uses its built-in software renderer. You can also enable or disable 3D acceleration using the Game Options Menu. If your machine performance is slow, you can disable certain graphics options from this screen. For more information, see *Level of Details Settings* on page 25, and *3D Accelerator Settings* on page 30.

Contacting SSI Technical Support

If you are having problems, please consult the *Troubleshooting* section of this manual before contacting SSI Technical Support. We've put many of the solutions to the most common problems in this area. If you are sure that you meet the PANZER COMMANDER's system requirements and the game still does not run, please make certain that you are using the latest drivers for your system.

We have a staff of Technical Support Specialists ready to help you with any technical problems you may have with any of our games. If your problem is due to your system configuration they can suggest some possible solutions.

Because of the millions of different hardware and software configurations possible with today's PCs, you may still have to consult with your computer dealer, hardware manufacturer, or software publisher to properly configure your system before our game will work. You may also need to get the latest version of your sound, video, mouse, or CD-ROM drivers before the game will run properly.

We suggest contacting SSI Technical Support via fax or e-mail if possible. Please send a printout of your c:\autoexec.bat file, a printout of your c:\config.sys file, and a complete description of the problem. Please include the operating system you are using, and any error messages you have seen which indicate that there is a problem.

Please send this information to our fax number, or the e-mail address found below.

Fax: (415)895-2113 Attn: Technical Support

E-mail: ssitechsupt@mindscape.com

If you cannot fax or e-mail us, we can also be reached by phone. Our Technical Support number is (415) 895-2626. The phones are open from 8:30AM to 5PM Pacific Time, Monday through Friday (holidays excluded). **Absolutely no game playing hints will be given through this number.**

If the game about which you are inquiring has been out for more than 90 days, you'll also want to visit our website to be sure you are running the latest version of the game before contacting SSI Technical Support. The SSI website is located at www.ssionline.com. PANZER COMMANDER also has its own website at www.panzercommander.com.

TUTORIALS

The easiest way to become familiar with the interface, game play, and tactics of PANZER COMMANDER is to run through the tutorial scenarios that have been created. Both tutorials are accompanied by step-by-step explanations, which walk you through the scenarios. The first describes how to drive your tank, navigate through a mission, and operate your guns to destroy targets; the second tutorial delves into the basics of commanding a platoon of tanks and surviving against enemy tanks.

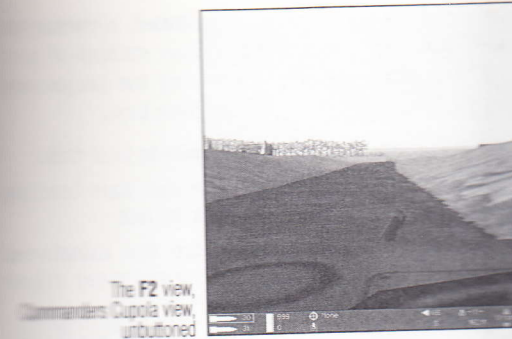
The tutorials are basically the same for all four nationalities with one important distinction: the tanks (and the range finders for aiming the main gun) are specific to that nation. The tanks therefore have different speeds, armor, etc. which can change the difficulty of the tutorial slightly. It's a good idea to check your crew and tank abilities as you start the scenario.

Training Mission 1 – Basic Tank Command

This mission scenario introduces you to the basics of driving your tank, ordering your driver, navigating to way points, and using the commander's map display.

From the Main Menu, click on Single Scenario, choose a nationality, and click on 1-Training in the scenario listing. Click on the "checkmark" button, described as Accept Chosen Scenario, to bring up the Briefing screen. You are given a brief description of the scenario, requirements for victory in the scenario, your crew's rank, the type of tank you are commanding, and the time you have to accomplish your goals. Click again on the "checkmark" button to enter the simulator.

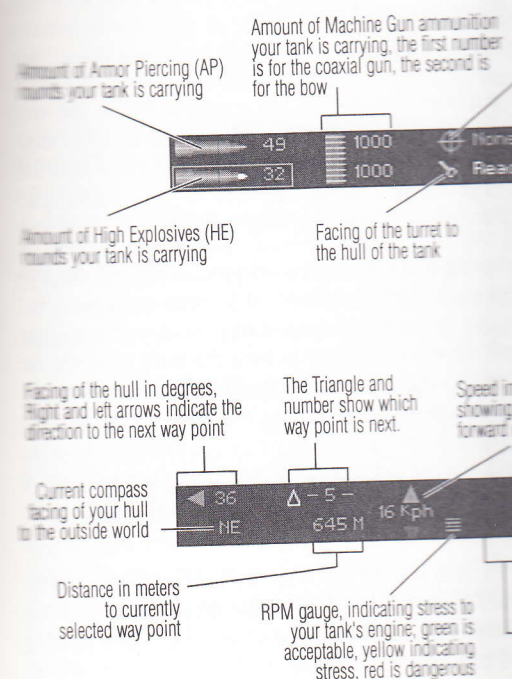
While you are playing the tutorial, if you need to pause the game, restart the scenario, or end the scenario, press the **Escape** key. This brings up a screen which allows you to **Continue Scenario in Progress**, **Restart the Scenario** from the beginning, **End Scenario and Save Results**, or **End Scenario** and return to the Main Menu without saving.



The Status Bar and Station Views

You now have command of a tank and you are standing in the tank. The tank is already moving to your first way point.

On the Status Bar at the bottom of the screen are several indicators. Understanding these indicators is vital to game play. In detail in *Using the Status Bar* on page 56, however, the Status Bar is split into two pieces to facilitate description.



or the e-mail address found below:

ached by phone. Our Technical Support
en from 8:30AM to 5PM Pacific Time.
olutely no game playing hints will

has been out for more than 40
be sure you are running the latest
chnical Support. The SSI website is
ANDER also has its own website

ace, game play, and tactics of PANTHER
s that have been created. Both tuto-
s, which walk you through the sce-
k, navigate through a mission, and
torial delves into the basics of com-
enemy tanks.

ationalities with one important dis-
g the main gun) are specific to that
armor, etc. which can change the
check your crew and tank abilities

f driving your tank, ordering your
mander's map display.

a nationality, and click on 1-Training
button, described as Accept Chosen
en a brief description of the sce-
crew's rank, the type of tank you
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se the game, restart the scenario,
rings up a screen which allows
e Scenario from the beginning,
ario and return to the Main

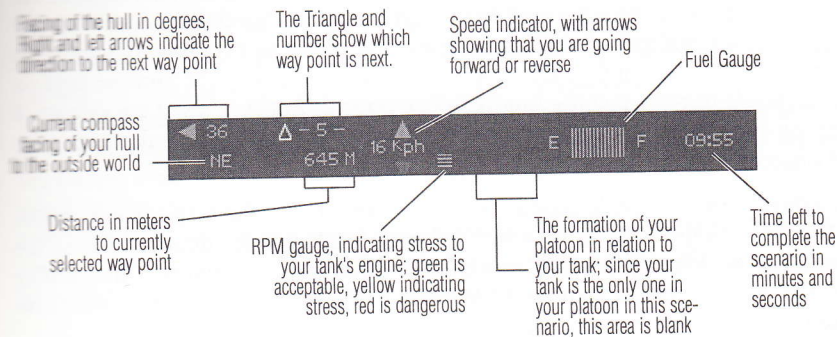
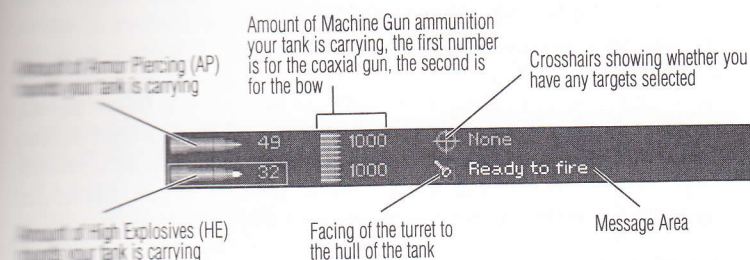


Status Bar

The Status Bar and Station Views

You now have command of a tank and you are standing in the turret looking out. Your tank is already moving to your first way point.

At the bottom of the screen are several indicators. Learning to watch and understand these indicators is vital to game play. These indicators are described in detail in *Using the Status Bar* on page 56, however a brief description follows. The Status Bar is split into two pieces to facilitate description.



You start each scenario from the commander's cupola view, unbuttoned, allowing a wide range of vision, and from which you can command the other stations of the tank. You can switch through the various other views, representing the gauges and range of view available at the other stations, by pressing the function keys.

- F1 External tank view. In this view the camera always points towards your tank.
- F2 Commander's cupola view, unbuttoned. This is the view you would have from the commander's cupola with the hatch open and your head sticking out.
- F3 Commander's cupola view, with binoculars. The view from the unbuttoned commander's cupola, seen through a pair of binoculars allowing you to see objects farther away.
- F4 Commander's cupola view, buttoned up. Although your view is more constrained here, your tank commander is safer, and you are able to see the commander's map.
- F5 Driver's view. This is the view you would have from the driver's seat.
- F6 Gunner's view. This view provides access to the basic gunnery functions for the main gun and the coaxial machine gun. This is 2.5x magnification.
- F7 Gun sight view. This is a 5x magnified gun sight which allows you to better target more distant objects for your main gun.
- F8 Bow machine gun view. This view allows you to operate the bow machine gun.

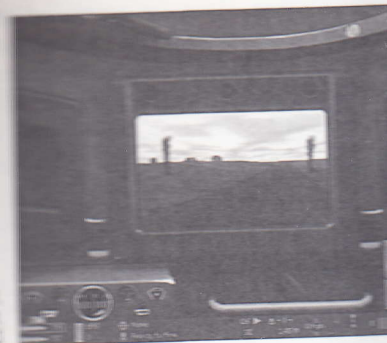
From either the **F2** or **F3** view, the **7**, **9**, **1**, and **3** on the **keypad** govern which way you are looking out from your tank. Flip through the different views, and try changing the direction you are looking. Press the **C** key to center your view.

Driving and Navigation

At the beginning of the scenario, your driver already has his orders to follow the way points. If you don't give the driver any orders, he follows the way points until the conclusion of the scenario. Your driver also notifies you verbally when you have reached the selected way point, and the message Way point Reached appears on your Status Bar. The selected way point automatically switches to the next way point.

You give orders to your driver by pressing the arrow keys on your keyboard, by joystick, or by rudder pedals if you have such devices connected to your computer. For any method, **up** orders your driver to go faster, **down** means to slow down or go into reverse if you are already stopped, **left** orders the driver to turn the tank towards the left, and **right** means turn the tank to the right. Pressing the **Delete** key orders the driver to hit the brakes and stop. Another method of setting the speed of your tank, which gives more control than the up and down arrows, is using the **number keys** on your keyboard. Press a number from 1 to 0 to set the throttle, 1 being the slowest, 0 being top speed. Pressing the ~ key sets your tank's throttle to idle, and pressing the **End** key orders your driver to reverse direction.

If you have the turret facing another direction than the way the tank is going, pressing **D** orders the driver to turn the tank's current heading to the direction you as the commander are looking. Practice increasing and decreasing your speed, and turning your tank to either side, then press **F4** to bring up the commander's cupola view, buttoned up, from which you can view the commander's map.



the map are shown the terrain, roads, buildings and
 again. As you may recall from the scenario briefing,
 destroy the structures there, and then clear the
 road to the north. Right now you need to get to the cross
 section. If you follow the road you will eventually reach
 your driver to drive the tank by pressing the A key to or
 select way point. From the commander's screen you
 speed of your tank, but if you move the tank from side to
 control of the tank to you. Try driving toward the next
 relinquish control of the tank to your driver, and comma
 need to navigate to the original way point he was head

Basic Weapons Training

Your next goal is to become familiar with your armament starting with a farm. To fire your main gun, press the S. Your loader automatically chambers a round of the same type and notifies you verbally when completed. To change the shell type, you started with the armor piercing (AP) shell by default, press the HE key to fire a high explosive (HE) shell. If your loader has already chambered a round, it then reloads it with the next shell type. This takes extra time. To fire the round currently in your gun at an appropriate target, press the fire key. You can fire multiple rounds at different target types while your loader is loading the next round.

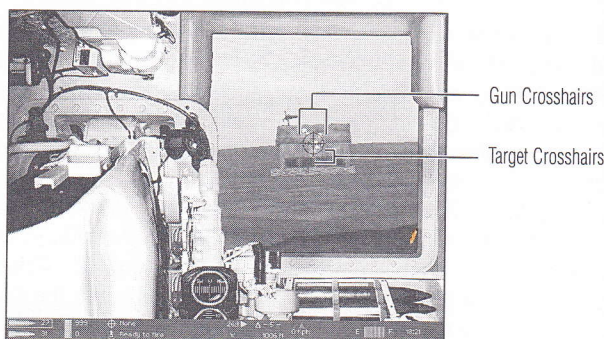
way the tank is going, pressing to the direction you as the commander's cupola view, but-



Your next goal is to become familiar with your armament by destroying five structures, starting with a farm. To fire your main gun, press the **Spacebar** or **Joystick Button 1**. Your loader automatically chambers a round of the same type of shell just fired, and notifies you verbally when completed. To change the shell type press the **G** key. Since you started with the armor piercing (AP) shell by default, this selects the high explosive (HE) shell. If your loader has already chambered a round, he unloads the gun, and then reloads it with the next shell type. This takes extra time, and it is often better to fire the round currently in your gun at an appropriate target, then change ammunition types while your loader is loading the next round.

Press **F6** to bring up the Gunner's view. Using the arrows on the numeric keypad, you can move your turret left or right, and the barrel of the main gun up or down. Hold the **Shift** key down while moving the gun for fine control. While you are in the Gunner views (**F6** and **F7**) you can use the joystick to control the aiming of your gun. While in the **F6** or **F7** view, pressing **S** selects the target centered in the sight. By pressing **S**, two red crosshairs are displayed, you are now using the range finder. For additional information see *Using the Range Finder* on page 47, but for now, the basics will do. Move the crosshairs so that they are completely covered by the side of the barn, and line up the crosshairs with each other by pressing **Page Up** or **Page Down** (Use the regular keys, not the keypad). Once the crosshairs are lined up, place the target reticule on the target and fire your main gun by pressing the **Spacebar** or **Joystick Button 1**. You should see an explosion on the barn's side if you have aimed correctly.

The **F6** view,
Gunner's View



Press the **F7** key to bring up the 5X power Gunner's view. Align your crosshairs with the barn, and fire your main gun again. You should see another explosion if you have aimed correctly. To fire the coaxial machine gun press down the **Left Control** key or **Joystick Button 3**. This gun uses the same targeting crosshairs as the main gun. Center the crosshairs on the barn again, and fire the coaxial machine gun. Switch to the commander's cupola view unbuttoned, and fire both guns again. You do not have to be in a gunner's screen to fire the main gun or the coaxial machine gun, but you cannot aim those guns from any other view.

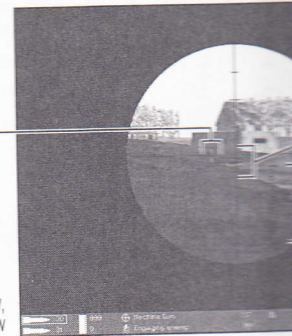
The tank you are commanding also may have a bow machine gun. Press the **F8** key to switch to the Bow Gunner's view. To fire the bow machine gun you must press the **Spacebar** from within the Bow Gunner's view. This gun is targeted where the crosshairs are pointed, like the other guns. You may need to drive your tank to a different facing in order to aim your bow machine gun at the barn.

Once a structure has taken enough damage, it collapses. Rotate your turret or tank and destroy the barn and the four houses. You have accomplished your second goal.

Advanced Weapons Training

Target Crosshair

The **F7** view,
Gunsight View

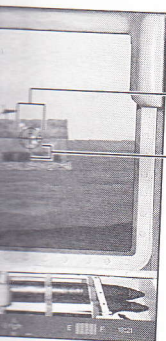


Now you must destroy an enemy gun emplacement just north of the crossroads. Move northward until the first enemy is spotted. Press the **T** key. The currently selected enemy. If there is more than one enemy, it cycles through all available enemy targets until a red or green crosshair. Press **N** to select the next target. Press the **Back** key to return to the previously selected target. If you are targeting an enemy, you can press the **E** key to order your tank to fire. Your gunner then fires the main gun and you also switch to the Gunner's View, and fire on the target. Press the **T** key to return to the Gunner's View, press the **T** key to return to the Gunner's View, press the **T** key to return to the Gunner's View.

To minimize the risk to your tank, it is best to stay in a hull-down position. Hull down is when the hull of your tank is only part visible to your enemy is your turret while still being able to fire your guns. If you are in a hull-down position, you can still see the enemy, and in a hull-down position.

When the first gun emplacement is destroyed, the rest of the enemy. There are four more gun emplacements. Because of the wider range of vision from the commander's cupola, you may be times that you as the commander see a target. Press the **T** key, but your gunner does not see the target. If this happens, you can switch to the Gunner's View, and fire on the enemy. Center the crosshairs with each other, place the target reticule on the target, and fire. If you can see the enemy, they can see you being hit and could be destroyed.

ing the arrows on the numeric keypad barrel of the main gun up or down. You fine control. While you are in the Gunner's control the aiming of your gun. While you get centered in the sight. By pressing the w using the range finder. For additional page 47, but for now, the basics will be covered by the side of the barrel and pressing **Page Up** or **Page Down** (Use the arrows are lined up, place the target reticle pressing the **Spacebar** or **Joystick Button** side if you have aimed correctly.



Gun Crosshairs

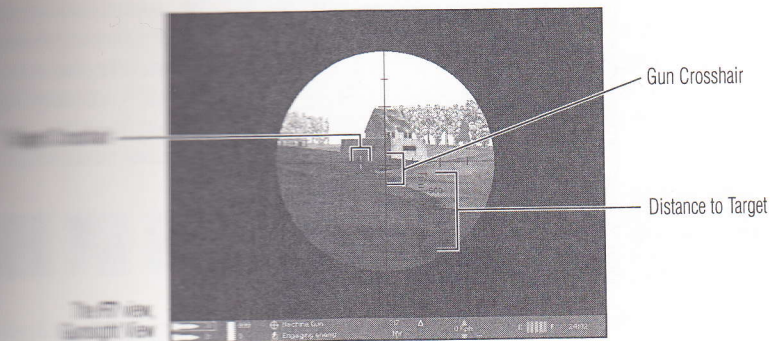
Target Crosshairs

er's view. Align your crosshairs with could see another explosion if you have press down the **Left Control** key or targeting crosshairs as the main gun. the coaxial machine gun. Switch to re both guns again. You do not have for the coaxial machine gun, but you

ow machine gun. Press the **F8** key to w machine gun you must press the gun is targeted where the crosshairs rive your tank to a different facing in

pses. Rotate your turret or tank and accomplished your second goal.

Commander's View Training

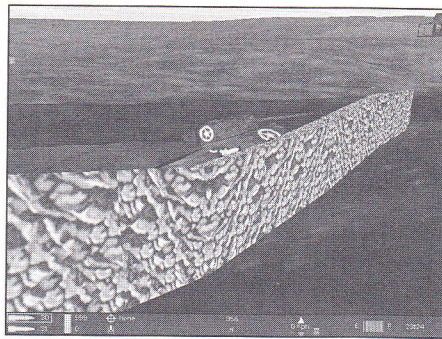


Now you must destroy an enemy gun emplacement that is set up to defend the road just north of the crossroads. Move northward on the road toward way point nine until the first enemy is spotted. Press the **T** key. This orders your gunner to track the currently selected enemy. If there is more than one enemy, pressing the **Tab** key repeatedly cycles through all available enemy targets. The selected target is indicated by a red or green crosshair. Press **N** to select the nearest available target and press the **Caps Lock** key to return to the previously selected target. When the gun emplacement is targeted, you can press the **E** key to order your gunner to engage the currently targeted enemy. Your gunner then fires the main gun at the target until it is destroyed. You can also switch to the Gunner's View, and fire on the enemy emplacement yourself. To center your turret and release the tracking, press **5** on the key pad.

To minimize the risk to your tank, it is best that you position the tank in a hull down location. Hull down is when the hull of your tank is not visible to the enemy; when the only part visible to your enemy is your turret. It provides the smallest target possible while still being able to fire your guns. If you are at way point nine, your tank is behind a wall, and in a hull-down position.

When the first gun emplacement is destroyed, continue down the road and engage the rest of the enemy. There are four more gun emplacements dug into this stretch of road. Because of the wider range of vision from the commander's cupola view, there may be times that you as the commander see the enemy before your gunner; if you press the **T** key, but your gunner does not acquire the target you want, your gunner can't see the target. If this happens, you can switch to the 5x power gunner's view (**F7**), target your guns, and fire on the enemy yourself. Just line up the range finder crosshairs with each other, place the target reticle on the target, and fire. Remember that if you can see the enemy, they can see you. If you hear any clanging, your tank is being hit and could be destroyed.

A good hull down location. Most of the tank is shielded by the wall, but the gun is free to fire.



To see if you have found a hull down location, press the **F1** key and use the **7**, **9**, **1** and **3** keys on the **keypad** to rotate your view so that you are in front of your tank. Most of your tank should be behind the wall, but you may wish to maneuver a bit to settle your tank in the best possible cover. When you have achieved a good hull down position, target the rest of the enemy gun emplacements, and destroy them before time runs out.

When you have completed the scenario, press **Escape** and click on the “checkmark” button to see the statistics of the mission. The Evaluation screen shows the outcome of the scenario and elapsed time. This screen also shows how many tanks, AFV, trucks, anti-tank guns, machine guns, and buildings you destroyed, and what, if anything, your side has taken in losses.

Click on the “checkmark” button at the lower-right side of the Evaluation screen to return to the Main Menu. You are now ready for the second training mission.

Training Mission 2 – Basic Platoon Command

This will be your first battle against live enemy tanks whose commanders are doing their best to destroy your tank. This scenario teaches you the basics of maneuvering, flanking, and using the terrain to your advantage. You also learn how to give commands to your platoon.

From the Main Menu, click on Single Scenario, choose a nationality, and click on 2-Training in the scenario listing. Click on the “checkmark” button, described as Accept Chosen Scenario, to bring up the Briefing screen. You are given a brief description of the scenario, requirements for victory in the scenario, and the time you have to accomplish your goals. Take note of your crew rating and tank type; you may want to look up your tank in the *Tank Statistics and Capabilities* section starting on page 73. Click again on the “checkmark” button to enter the simulator.

While you are playing the tutorial, if you need to pause the game, restart the scenario, or end the scenario, press the **Escape** key. This brings up a screen which allows you to **Continue Scenario in Progress**, **Restart the Scenario** from the beginning, **End Scenario and Save Results**, or **End Scenario** and return to the Main Menu without saving.

Giving Your Platoon Orders

At the start of this scenario, you are the commander of a platoon of tanks. You have two additional tanks to give orders to. You can give orders to your platoon members on the other tanks in your platoon, you can target, and pressing **Shift** and a number key will give you a target. Press the **V** key to change your view to the view from the front of your tank. Press the **H** key to return to your tank. Press the **F** key to order them to fire at will on their



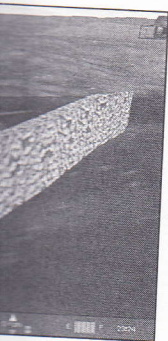
Your platoon generally follows your tank, in which case you can align itself in a formation press the **F** key. Repeatedly pressing of the **F** key cycles through the formations from left to right: column, echelon, wedge, and crescent. For more information about changing the platoon formation starting with the wedge formation, for now.

Carrying the Attack

There are several enemy emplacements along the way. If you follow the way points, you will approach the enemy from the rear and surprise them. Drive to the center of the enemy positions and align yourself roughly straddling the crossroads to maintain their current position. This will allow you to defend that important crossroads and continue with the attack.

You must destroy all the enemy tanks to win. This is a great opportunity to allow a step by step description of the concepts in mind while you are h

- Use your platoon members. If a particular tank is in a good firing position on you, use it to take some of the heat off.
- Continuously moving lessens your chance of being hit. The only time that you can fire accurately is when you are on a road. When traveling over rougher terrain, you shoot, line up your shot, fire, and move.
- Attack one enemy at a time. If you take out a tank, its destruction increases.



the F1 key and use the 7, 9, 1 and you are in front of your tank. Most of wish to maneuver a bit to settle your a good hull down position, and destroy them before time runs out.

ape and click on the "checkmark" evaluation screen shows the outcome shows how many tanks, AFV, trucks, destroyed, and what, if anything.

t side of the Evaluation screen to e second training mission.

nd
ks whose commanders are doing es you the basics of maneuvering. You also learn how to give com-

nationality, and click on 2-Training button, described as Accept Chosen en a brief description of the sce- the time you have to accomplish e; you may want to look up your arting on page 73. Click again on

e the game, restart the scenario, ings up a screen which allows e Scenario from the beginning, rio and return to the Main

Basic Platoon Orders

In this scenario, you are the commander of a platoon of three tanks, so you have two additional tanks to give orders to. Although you cannot personally man the other tanks in your platoon, you can select targets for them by selecting a target and pressing Shift and a number key, either 1 or 2 to assign that tank that target. Press the V key to change your view to the next tank in your platoon, and the R key to return to your tank. Press the H key to order your platoon to hold fire, and the F key to order them to fire at will on their selected targets.



Your platoon generally follows your tank, in a set formation. To give orders to your platoon to align itself in a formation press the F key. On the Status Bar is a diagram of where your two platoon members are supposed to form up in relation to your tank. Continuously pressing of the F key cycles through the six different formations, shown above from left to right: column, echelon left, echelon right, line abreast, wedge and circular. For more information about the uses of the different formations, see *Changing the Platoon Formation* starting on page 53. Order your platoon into the wedge formation, for now.

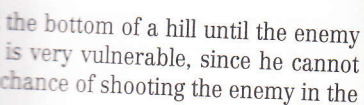
Carrying the Attack

There are several enemy emplacements and tanks awaiting you at the crossroads. If you follow the way points, you will approach the crossroads from the south and should surprise the enemy. Drive to the center of the crossroads, until your platoon members are aligned roughly straddling the crossroads, and press the M key to order your platoon to maintain their current position. Your platoon will now stay in their current positions to defend that important crossroads from the enemy and allow you and your tank to continue with the attack.

You must destroy all the enemy tanks to get a victory. The complexity of battle is too great to allow a step by step description of how to defeat your opponents. Keep the following concepts in mind while you are hunting your prey:

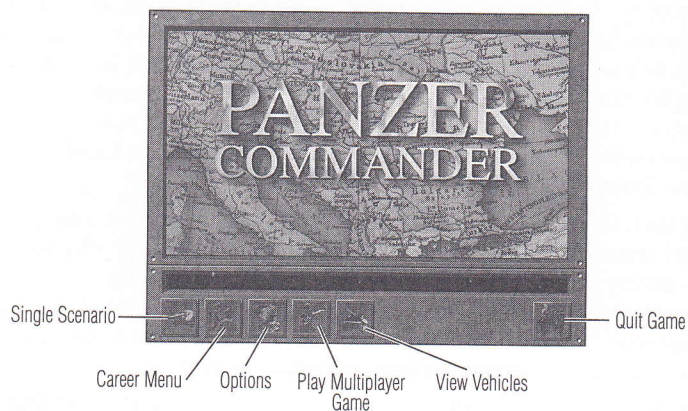
- Use your platoon members. If a particular enemy tank is giving you trouble, or seems to have a good firing position on you, order your platoon members to fire on that tank, and take some of the heat off.
- Continuously moving lessens your chance of being hit by the enemy; however, about the only time that you can fire accurately on the move is if your tank is traveling on a road. When traveling over rougher terrain, have a stable gun platform. Stop before you shoot, line up your shot, fire, and then move.
- Attack one enemy at a time. If you take on more than one enemy, the chances of your tank's destruction increases.

continued...



If you have completed the scenario, either victorious – having destroyed all enemy tanks, by running out of time or through death, an Evaluation screen appears, showing the outcome and the time it took you to complete the scenario. The screen also displays a tally of the number of tanks, AFV's, trucks, anti-tank guns and buildings you and your platoon have destroyed. You are also shown the losses your side has taken. Click on the “checkmark” button to exit the Evaluation screen and return to the Main Menu.

■ MAIN MENU AND RELATED SCREENS



As you start the game, an introductory cinematic plays. Press the **Escape** button to exit the cinematic, and bring up the Main Menu. The Main Menu is the starting point for PANZER COMMANDER, and offers you the following choices:

Single Scenario



This brings up the Scenario Selection screen, where you can choose one of 40 stand alone scenarios. You can command a German, Soviet, American or British tank. For more information, see the *Playing a Single Scenario* section starting on page 19.

Career Menu



This brings up the Career Selection screen, from which you can choose to play through the career of either a Soviet or German tank unit. There are six different campaign games available. For more information, see the *Playing a Campaign* section starting on page 21.

Options



This brings up the Options Menu, from which you can alter various sound and display settings, set the level of realism, see the credits, or configure input devices. For more information, see the *Game Options* section starting on page 24.



Multiplayer



This brings up a series of screens that allow you to play a multiplayer game over the internet or a local area network. Information on setting up multiplayer games can be found in the *Game* section starting on page 32.

View Vehicles



This brings up the View Vehicles screen, which displays 3D models of all the vehicles in PANZER COMMANDER. For more information on the View Vehicles screen, see the *Models* section on page 39.

Quit Panzer Commander

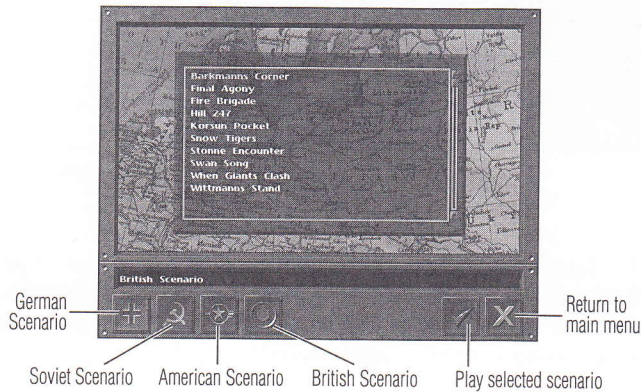


The Quit button is located at the lower right of the Main Menu. Clicking this button brings up the Quit screen, which is a button that, if pressed, exits the game. To the right of the Quit button is a button that returns you to the Main Menu.

■ PLAYING A SINGLE SCENARIO

While you want to play one or all of the campaigns to get the most out of *PANZER COMMANDER*, we have also provided 40 stand alone for those moments when you need a "quick fix." These scenarios put you in the commander's cupola of German, Soviet, American or British tanks and many are based on historical tank battles.

Choosing a Scenario



To play a scenario, click on the Single Scenario button on the Main Menu display. The Scenario screen appears with buttons at the bottom displaying the symbols for the German, Soviet, American or British scenario categories and a list of scenarios at center screen.

The category buttons allow you to choose which army you wish to fight for. When you click on a country, a different list of scenarios appears in the list box. To choose a scenario, select one from the list and click on the "check mark" button in the lower-right corner of the screen. You may have to scroll down through the list box to see all of the scenarios. Windows-style scroll bars allow you to do this.

After clicking on the "check mark" a description of the scenario appears along with the type of tank you are commanding, and your crew rating. If you want to play the scenario, click on the "check mark" button again to enter the simulator, otherwise, click on the "X" button to return to the Scenario screen. If you decide you don't want to play a scenario, click on the Main Menu button on the lower-right corner of the Scenario screen to return to the Main Menu. See *Simulation Concepts* starting on page 40 for detailed information about controlling your tanks and playing the game.

Ending a Scenario

You can choose to end a scenario at any time during the simulation. The End Scenario screen appears, at the bottom of the screen.

Continue Scenario in Progress



This returns you to the simulation. The End Scenario screen allows you to use the Escape key to return to the Main Menu.

Restart Scenario from Beginning



This restarts up the scenario. Note that this function erases any victory points you have earned.

End Scenario and Save the Results



This ends the current scenario and returns you to the Main Menu screen. This function is particularly useful if you do not have enough points for a minor victory. If you have achieved the minimum number of points for a minor victory, you must replay the scenario and win in order to receive the points.

End Scenario



This exits the current scenario and returns you to the Main Menu, saving your results.

When you are done playing the scenario, the End Scenario screen, which shows you how well you did, appears. Click on the End Scenario button to return to the Main Menu.

Note that playing scenarios in this way does not count toward your campaign. If you wish to start a new campaign or return to a campaign, see the options described on the following pages.

campaigns to get the most out of PANZER alone for those moments when you need the commander's cupola of German, Soviet, and on historical tank battles.



Return to main menu

Play selected scenario

button on the Main Menu display. The bottom displaying the symbols for scenario categories and a list of scenarios at the bottom.

army you wish to fight for. When you appears in the list box. To choose a "check mark" button in the lower-right corner through the list box to see all of the options to do this.

of the scenario appears along with the new rating. If you want to play the scenario enter the simulator, otherwise, click on the "X" button. If you decide you don't want to play the scenario, click the "X" button in the lower-right corner of the Scenario list box. For more information on the *Mission Concepts* starting on page 40 for playing the game.

Ending a Scenario

You can choose to end a scenario at any time during play by pressing the **Escape** key. The End Scenario screen appears, at the bottom of which are four buttons.

Continue Scenario in Progress



This returns you to the simulation, exactly where you exited it. This function allows you to use the **Escape** key as a Pause button.

Restart Scenario from Beginning



This restarts up the scenario. Note that choosing to restart a scenario erases any victory points you have accumulated in the scenario so far.

End Scenario and Save the Results



This ends the current scenario and brings up the Mission Evaluation screen. This function is particularly useful during campaign play, allowing you to end a scenario and go on to the next, once you have garnered enough points for a minor victory. However, if you end the scenario before achieving the minimum number of points for a minor victory, you lose the scenario, and must replay the scenario and win in order to progress in the campaign.

End Scenario



This exits the current scenario and returns you to the Main Menu, without saving your results.

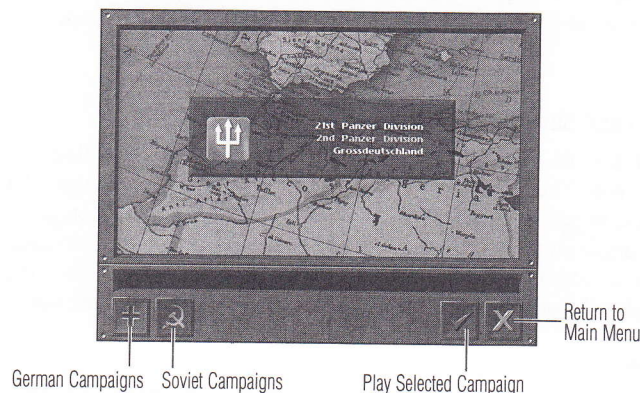
When you are done playing the scenario, an Evaluation screen is displayed which shows you how well you did. From there, a button allows you to return to the Main Menu.

Note that playing scenarios in this way does *not* affect your campaign record. If you wish to start a new campaign or return to a campaign in progress, use the campaign options described on the following pages.

■ PLAYING A CAMPAIGN

PANZER COMMANDER provides a number of options for campaign play which put you in command of a German or Soviet tank platoon. The campaigns are based in part on actual unit histories and take place in all of the major areas of operations in Europe, Russia and North Africa. A detailed history of the real life careers of these platoons is available as an electronic document, named HISTORY.PDF located on your game CD in the main directory. For help accessing this Adobe Acrobat File, see the *Electronic Documentation* section on page 3.

Loading a Career or Starting a New Campaign



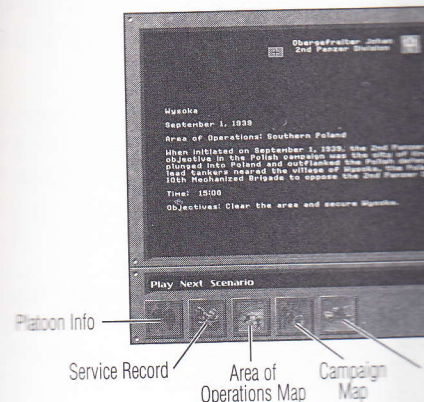
To begin a new campaign or return to an existing campaign, click on the Career Menu button located on the Main Menu. This brings up the Career screen. Select either German or Soviet armies using the two buttons at the lower-left corner. Choose the unit you wish to fight as from the options at center screen and click on the "check mark" button.

If you have previously started one or more careers as this division, they now appear in a list located at center screen. If you wish to resume one of these careers, choose one from the list and click on the "check mark" button.

If you want to start a new career, click on the button in the lower-left corner of the screen labeled New Career which displays the Recruitment screen. This contains a brief description of the unit and provides a text box into which you must type the name you wish to use as commander of the platoon. When you have typed in that name, click on the "check mark" button to begin your new campaign.

Once you begin a new career or load an existing career, briefing information for this area of operation is provided to set the stage for the next series of missions. You can proceed by clicking the "check mark" button. This brings up the Briefing Menu.

The Campaign Briefing Menu



Several buttons can be found at the bottom of the screen. Click on the 'Platoon Info' button to review your platoon's progress in the campaign. Click on the 'Service Record' button to see a description of the next mission scenario. Click on the 'Area of Operations Map' button to see details on playing a mission, see the section *Simulating a Mission*.

When you have finished the mission, an evaluation screen is displayed. Your performance is evaluated and you are shown how well you did. The number of kills, objectives achieved and whether you won or lost the mission are shown. This information is recorded and becomes part of your Service Record which you can review using the Service Record button.

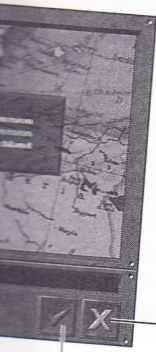
If you're unhappy with your performance in a mission, you can immediately replay the scenario, even if you have already won. To replay a mission, the new statistics replace the old ones and the service record is adjusted accordingly. Note that you can pause the game at any time using the **Escape** key. See *Ending a Mission* for more information. Descriptions of the Briefing Menu buttons are given below.

Platoon Info

Click this button to display the current crew statistics for your platoon. This is in tabular form where you can see the performance of each crew member while each member of each crew is in a tank. The crew members are Commander, Driver, Gunner, and Loader. Tanks have stations for dedicated machine gunners. Crew performance is not tracked individually for your tanks.

ions for campaign play which provide
on. The campaigns are based on
the major areas of operations in
the real life careers of these panzer
STORY.PDF located on your game CD-ROM.
Adobe Acrobat File, see the *Electronic*

Campaign



Selected Campaign

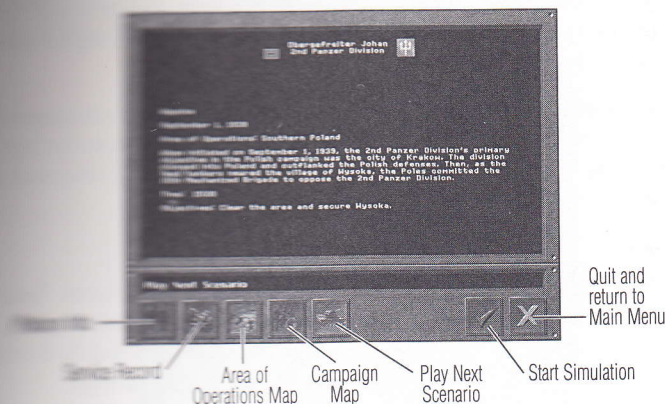
campaign, click on the Career Menu button
Career screen. Select either German or
left corner. Choose the unit you wish
click on the "check mark" button.

as this division, they now appear
one of these careers, choose
on.

on in the lower-left corner of the
ent screen. This contains a brief
which you must type the name you
have typed in that name, click on
n.

eer, briefing information for this
next series of missions. You can
ngs up the Briefing Menu.

Campaign Briefing Menu



These buttons can be found at the bottom of the Briefing Menu, which allow you to
view your platoon's progress in the campaign, your career and your crew's experi-
ence. A description of the next mission scenario appears as a default. You can proceed
with the mission and enter the simulator by clicking the "check mark" button. For
details on playing a mission, see the section *Simulation Concepts* starting on page 40.

When you have finished the mission, an evaluation screen appears where your per-
formance is evaluated and you are shown how well you did, including details about the
number of kills, objectives achieved and whether this is a major victory, minor victory
or a loss. This information is recorded and becomes part of your career statistics,
which you can review using the Service Record option described below.

If you're unhappy with your performance in a particular mission, you have the option
to immediately replay the scenario, even if you were killed in that mission. When you
replay a mission, the new statistics replace those of your previous attempts and your
service record is adjusted accordingly. Note that you can end the scenario you are play-
ing at any time using the **Escape** key. See *Ending a Scenario* on page 20 for more infor-
mation. Descriptions of the Briefing Menu buttons follow:

Platoon Info

Click this button to display the current crew standings of every member of your pla-
toon. This is in tabular form where each tank crew is listed down the table
while each member of each crew is listed across. From left to right the crew
members are Commander, Driver, Gunner and Loader. Although many
tanks have stations for dedicated machine gunners, not all do and these are
not tracked individually for your tanks.

Each crew member has an individual entry in the table which contains a number of stars which correspond to that crew member's experience level. At the beginning of your career, these crew members have only one or two stars, indicating that they are pretty green troops. It is up to you to make sure they survive long enough to gain experience. As they do, the number of stars for each increases.

Occasionally some of your crew members are killed in battle. When this happens, you are given replacements who are most likely inexperienced and you are going to have to bring them up to speed. Naturally, it is in your best interests to keep your experienced crew members alive.

Service Record



When you click this button your service record is displayed. This screen contains statistics regarding your battle performance, including major and minor victories, number of kills and number of tanks killed. It also displays any medals you have received for outstanding performance.

Campaign Map



This button displays a large scale map of the European theater which highlights all of the areas of operation in which your unit has fought thus far in your career. As the war continues, the number of highlights grows as your unit is moved to different areas of operation. You can return to an area of operation by clicking on its highlight on the Campaign Map. This displays the Area of Operations map for that area.

Area of Operations Map



Clicking this button displays a more detailed map showing the general area in which your unit has fought. On this map are a series of highlights that show the location of every mission scenario you have played in this area.

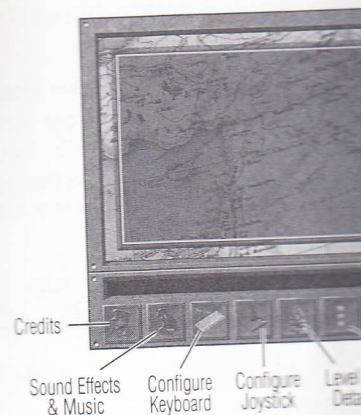
Play Next Scenario



If you have been playing earlier scenarios chosen from the Area of Operations, this button returns you to the latest mission scenario in your career. The briefing screen for that mission is displayed and you can launch that mission from there.

GAME OPTIONS

The Options Menu provides a number of settings to adjust the sound performance of PANZER COMMANDER.



To access the Options Menu, select the Options button which appears at the bottom of the screen. The Options Menu provides a number of settings which you can choose to adjust. We describe the following sections.

Credits



This option presents the names of all the people who worked on PANZER COMMANDER. Click on the Credits button to return to the Main Menu.

Sound Effects and Music



This group of controls allows you to adjust the sound effects and music. Click on the "checkmark" button to return to the Options Menu screen. Click on the "X" button to return to the Music screen without saving your changes.

Music Volume

This slider allows you to adjust the playback volume. Moving the slider to the right increases the volume while moving it to the left decreases the volume.

Sound Effects Volume

This slider allows you to adjust the playback volume. Moving the slider to the right increases the volume while moving it to the left decreases the volume.

3D Sound Effects

This check box is used to enable or disable 3D sound processing. If your sound cards don't provide 3D sound processing, forcing 3D sound may result in slow performance on some systems. Unchecking this box will boost your performance somewhat.

ry in the table which contains a number
ber's experience level. At the beginning
ly one or two stars, indicating that they
sure they survive long enough to gain
each increases.

are killed in battle. When this happens
y inexperienced and you are going
n your best interests to keep your

service record is displayed. This screen
battle performance, including major
nd number of tanks killed. It also displays
outstanding performance.

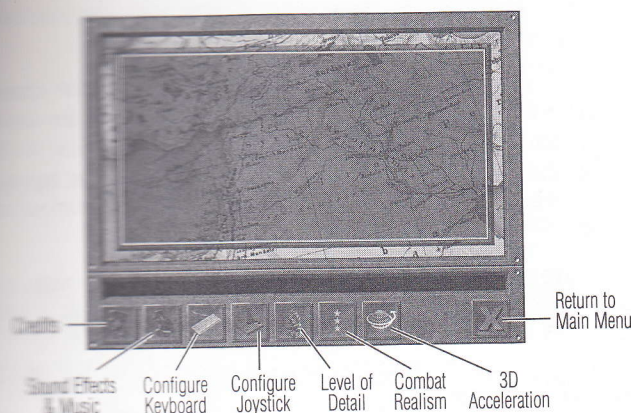
map of the European theater which
in which your unit has fought thus far
the number of highlights grows as your
operation. You can return to an area
campaign Map. This displays the Area

detailed map showing the general area
his map are a series of highlights that
scenario you have played in this area.

scenarios chosen from the Area of
to the latest mission scenario in your
ission is displayed and you can launch

GAME OPTIONS

The Options Menu provides a number of settings which can be used to tune the behavior of PANZER COMMANDER.



To access the Options Menu, select the Options button from the Main Menu. The row of buttons which appears at the bottom of the screen presents a number of categories of options which you can choose to adjust. We deal with each category separately in the following sections.

Credits



This option presents the names of all the hard-working folks who brought you PANZER COMMANDER. Click on the "X" button in the lower-right corner of the screen to return to the Main Menu.

Sound Effects and Music



This group of controls allows you to make general changes to the audio settings. Click on the "checkmark" button to save your changes and return to the Options Menu screen. Click on the "X" button to exit the Sound and Music screen without saving your changes.

Music Volume

This slider allows you to adjust the playback volume of music in the game. Moving the slider to the right increases the volume while moving it to the left decreases the volume.

Sound Effects Volume

This slider allows you to adjust the playback volume of sound effects.

3D Sound Effects

This check box is used to enable or disable 3D sound effects. Note that many audio cards don't provide 3D sound processing, forcing your computer's CPU to do the work. This may result in slow performance on some machines. Disabling 3D sound may boost your performance somewhat.

Configure Keyboard Commands



This settings screen allows you to change the way simulator commands are mapped to keys on your keyboard. While we have attempted to come up with a reasonable command set, you may find that you prefer to use different keys for some commands. To display the keyboard settings, click on the Configure Keyboard button at the bottom of the Options screen.

A list of commands with their associated keys is displayed at center screen. Note that the list is too large to be displayed fully, so you may have to use the scroll bar to the right of the command list to scroll some of the commands into view. To change a key command, select the command you would like to change using the mouse, then press the key on your keyboard which you would like to use to activate that command. That's all there is to it.

If the key you have chosen is already being used for a different command, then you need to either choose a different key or change the other command to use a different key. If there is such a conflict, the keys which conflict are shown in red until the conflict is resolved. If you exit this screen while a key conflict exists, the default command is used when that key is pressed.

Configure Joystick



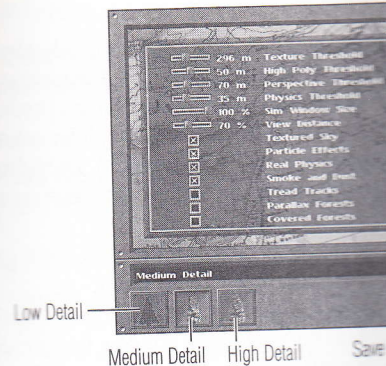
Clicking the Configure Joystick button on the Options screen displays the current list of joystick settings. These are changed in a similar fashion as the keyboard mappings. A list of commands is displayed along with their current joystick button assignment, if any. To assign a joystick button to the command, select the command with the mouse, then press the button on your joystick to which you would like to assign this command. Note that if the joystick button was previously assigned a different command, that command no longer has a corresponding joystick button.

Thrustmaster and *CH* joysticks are fully supported by PANZER COMMANDER. For information about configuring other types of joysticks to work with this game, see *Using a Joystick in PANZER COMMANDER* on page 5. Joystick input can disrupt keyboard play. If your joystick is not compatible with PANZER COMMANDER, or you prefer using the keyboard alone, you can disable the joystick by unplugging it from your computer. Also, pressing the Spacebar for a joystick command sets it to disabled.

Level of Detail Settings



This group of controls allows changes to the general visual details and affects the performance of the simulator in both Software Rendering mode and in 3D Accelerator mode. Although PANZER COMMANDER has been tuned to get the best possible performance, you may experience reduced frame rates on slower machines. If you are experiencing slow performance in the simulator, you can make adjustments here which improve the situation — at the expense of some visual realism.



Use the Detail Settings button at the bottom of the Settings screen. From here you can adjust the three buttons at the bottom of the screen. Low is the most rapid graphics display, Medium turns so balance of speed and appearance, while High turns most appealing graphics, but possibly reducing turn each setting on or off individually, to tailor

Texture Threshold

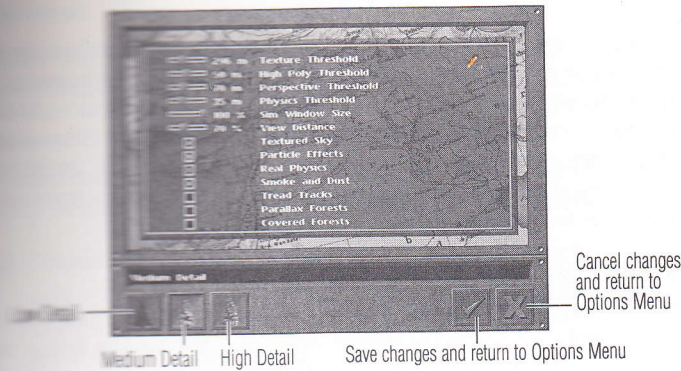
This slider bar allows you to control the appearance of objects that employ texture mapping. The farther to the right you slide the bar, the greater the distance at which texture mapping is used, improving the performance of the simulator by sliding the bar to the right. The amount of terrain and the number of objects rendered will decrease, the frame rate and smoothing simulator performance will improve, but also improves performance of the rendering engine, but also improves performance.

High Polygon Threshold

PANZER COMMANDER uses object models of varying detail to improve performance. Objects that are closer tend to use more detail, while objects that are farther away use less detail. This allows you to control the distance at which low detail models are substituted, resulting in improved performance by moving the slider bar to the right, which low-detail models are substituted, resulting in improved performance. This can be used and improving performance. This can be used in 3D-accelerated rendering engines.

Perspective Threshold

Perspective correction is a technique which improves the appearance of images. When not employed, the texture mapping is done in a way that is not perspective correct. Unfortunately, perspective correction is an expensive operation to perform and may cause slow performance. Adjusting the distance up to which perspective correction is used to the left, less terrain and fewer objects are rendered, which improves performance. This setting only works with the software rendering engine.



Click the Detail Settings button at the bottom of the Options Menu to bring up the Detail Settings screen. From here you can adjust the level of detail by selecting one of the three buttons at the bottom of the screen. Low turns most of the detail settings off for the fastest graphics display, Medium turns some on, but leaves others off to form a balance of speed and appearance, while High turns all of the detail settings on, for the most appealing graphics, but possibly reducing the speed of the game. You can also turn each setting on or off individually, to tailor the game to your visual preferences.

Texture Threshold

The slider bar allows you to control the apparent distance at which simulator graphics employ texture mapping. The farther to the right the slider bar is positioned, the greater the distance at which texture mapping is employed. You can improve the performance of the simulator by sliding the bar to the left using your mouse. This reduces the amount of terrain and the number of objects that are texture-mapped, increasing the frame rate and smoothing simulator performance. This is most effective in the software rendering engine, but also improves performance on slower 3D accelerators.

High Polygon Threshold

PANZER COMMANDER uses object models of varying detail levels to improve rendering performance. Objects that are closer tend to employ the more detailed, "high polygon" models, while objects that are farther away are rendered with less detail. This setting allows you to control the distance at which low-detail models are substituted. You can improve performance by moving the slider bar to the left. This reduces the distance at which low-detail models are substituted, resulting in fewer high-detail models being used and improving performance. This can have a big impact on both software and 3D-accelerated rendering engines.

Perspective Threshold

Perspective correction is a technique which enhances the quality of texture mapped images. When not employed, the texture mapped images tend to warp disconcertingly. Unfortunately, perspective correction is an expensive process for the software renderer to perform and may cause slow performance on some computers. This slider adjusts the distance up to which perspective correction is employed. By sliding this bar to the left, less terrain and fewer objects employ this technique and performance improves. This setting only works with the software renderer.

Physics Threshold

PANZER COMMANDER employs some of the most advanced ground vehicle physics available in a computer game. Unfortunately, the calculations required to portray this level of realism can be expensive. To improve performance, the simulator substitutes a less accurate physics model for objects at a greater distance. This slider allows you to adjust the distance at which the low-accuracy model is substituted. By sliding this bar to the left, the low-accuracy model is used sooner and performance improves, whether you are using the software renderer or a 3D accelerator.

Simulation Window Size

In general, the more pixels that have to be rendered, the poorer your simulator performance. This slider allows you to regulate the size of the window being rendered for external views. By sliding the bar to the left, you can reduce the window size and improve simulator performance. This is more effective for the software renderer since 3D accelerators tend to be more efficient at filling in pixels.

Maximum View Distance

The rendering engine employed in PANZER COMMANDER only draws objects out to a certain distance from the view point, allowing it to avoid drawing objects which are really far away, thus improving performance. This slider allows you to adjust the distance beyond which no rendering occurs. We suggest using this setting only in extreme circumstances as reducing the view distance may make it difficult to achieve the tactical goals of some missions.

Sky Texture

This check box allows you to turn the sky texture on or off. Generally, turning it off improves performance, especially in the software renderer.

Particle Effects

This feature improves the display of explosions. You may see a slight performance improvement if it is disabled.

Real Physics

This check box allows you to disable the advanced physics, forcing the simulator to always use the low-accuracy physics calculations. You may find that it is sufficient to use the Physics Threshold setting described above, rather than disabling accurate physics completely.

Smoke and Dust

You can use this check box to disable smoke and dust effects, which can improve performance slightly in some situations.

Tread Tracks

Turning this check box off disables the tracks left by tank treads in the simulator for a slight performance improvement.

High Detail Forest

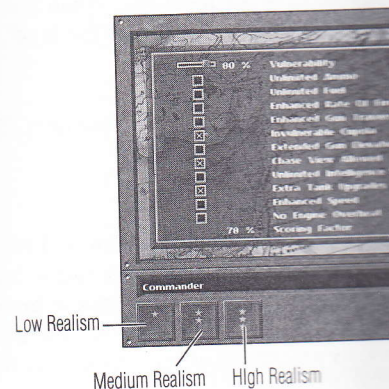
Turn this check box off to reduce the detail level of the forest, resulting in a significant performance improvement in scenarios.

Clipped Forests

Turn this check box off disables the appearance of a "fuzz" of trees, and speeding up performance in scenarios.

Adjusting Simulation Realism Settings

PANZER COMMANDER allows you to adjust the level of realism to make the game easier or more difficult. We suggest allowing a moderate level of play. Please note that turning realism settings off the game can be very difficult. Tank warfare was no picnic and in many cases you have been warned.



The Combat Realism screen presents a number of settings which affect simulation realism. To change the settings, go to the bottom of the Options Menu to bring up the Combat Realism screen. You can adjust the level of difficulty of play by selecting one of the three buttons at the bottom of the screen. Recruit turns most of the realism settings off, but leaves others on to create a more realistic simulation. You can turn some of the realism settings off, for a tremendous performance improvement, or on or off individually, to tailor your playing preference.

Vulnerability

This setting can render your tanks invulnerable in any situation and wreak maximum carnage. By default this is at 100%.

Unlimited Ammo

This setting provides all guns on your tank with unlimited ammunition. By default, the setting is off. You may wish to turn it on during the early learning stages since you tend to use more ammunition.

Unlimited Fuel

Turning this on allows you to drive your tank without the fear of running out of fuel. Most of the time you have sufficient fuel to complete your mission, but this may not always be the case. If you're running out of fuel you can turn this on to remedy the situation. By default this setting is off.

Enhanced Rate of Fire

Turning this on maximizes the stats for your loader, making him as efficient as possible. You may want to turn this on for your early missions as it gives you a better rate of fire. By default this is off.

Enhanced Gun Traversal

This setting allows you speed up the movement of the main gun. When this setting is off, the gun has a slower, more realistic traversal time. By default this is off.

Extended Gun Elevation

This setting grants your Main Gun a greater range of vertical movement. By default this is off.

Invulnerable Cupola

When you are using the unbuttoned cupola view, the binocular view and the external view, it is assumed that your commander's head is poking out of the cupola hatch. This is a vulnerable position to be in if you are under fire and can result in the injury or death of your character. This option allows you to disable the vulnerability of your character when using one of these views. By default this is on; disable it at your peril!

Chase View Allowed

Real World War II tanks didn't come equipped with an external camera view. By default, PANZER COMMANDER allows you to use this view (F1) to survey your tank and the surrounding terrain. Turning this setting off disables that ability.

Intelligence Map On

Inside the Commander's cupola there is a map display that shows you the surrounding terrain, including roads and rivers, the positions of all of your tanks and the way points assigned to you for this mission. Enabling this setting causes enemy unit positions to be displayed on the map as well. By default, this setting is disabled.

Extra Tank Upgrades

In career mode, you are occasionally offered the chance to upgrade to a more advanced tank for a particular scenario if you are doing well. If you turn this option off, you are never offered the upgrade and you receive new tanks only at the pre-scheduled times. By default, this setting is enabled.

Enhanced Speed

This setting can be used to improve the top speed of the British infantry tanks like the Matilda. By default this setting has a very low top speed. By default this setting is off.

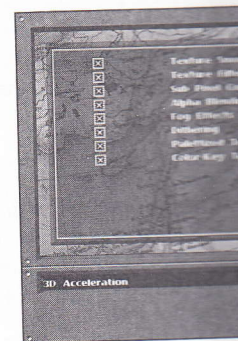
No Engine Overheat

Prevents your engine from overheating even during long drives.

3D Accelerator Settings



These settings are particular to the software renderer. Note that the settings described here, so altering the performance of your accelerator. We recommend consulting the documentation if you have any questions about a particular feature.



Save changes and return

Texture Smoothing

This setting enables continuous smooth shading. This only affects those objects which are in the foreground. It affects the way the terrain is rendered. With this setting on, the performance of most accelerators that support it will be improved.

Texture Filtering

This feature is used to improve the rendering of textures. When texture filtering is on, texture maps look less "chunky". Some accelerator cards exact a significant performance penalty when texture filtering is on. Some may get a decent performance boost by turning it off.

with unlimited ammunition. By default, the setting is disabled for the early learning stages since you need to learn the basics of the game.

Without the fear of running out of fuel, you can complete your mission, but this may not be the best option. You can turn this on to remedy the situation.

loader, making him as efficient as possible. This is particularly useful for early missions as it gives you a better chance of survival.

of the main gun. When this setting is on, the gun will fire more often. By default this is off.

range of vertical movement. By default this is off.

view, the binocular view and the external view. The external view is poking out of the cupola hatch. This view can result in the injury or death of your tank. By default this is on; disable it at your peril!

with an external camera view. By default, the external view (F1) to survey your tank and the terrain. This ability is disabled.

display that shows you the surroundings of all of your tanks and the way they are moving. This setting causes enemy unit positions to be visible. By default, this setting is disabled.

the chance to upgrade to a more powerful tank. If you turn this option on, you will receive new tanks only at the pre-defined levels.

Increased Speed

This setting can be used to improve the top speed of some tanks. This is particularly useful for the British infantry tanks like the Matilda, Valentine and Churchill, which have a very low top speed. By default this setting is disabled.

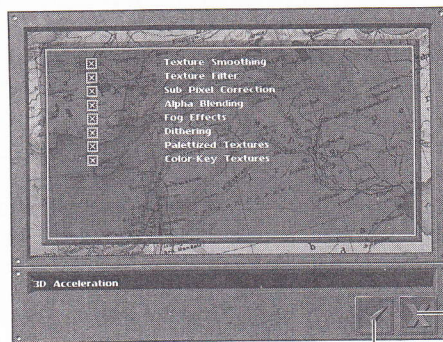
Unlimited Overheat

Prevents your engine from overheating even under great stress. By default this is off.

3D Accelerator Settings



These settings are particular to 3D accelerators and do not affect the software renderer. Note that some accelerators do not support the features described here, so altering these settings may not affect the behavior of your accelerator. We recommend checking your 3D accelerator documentation if you have any questions about whether or not your card supports a particular feature.



Save changes and return to options menu

Cancel changes and return to options menu

Texture Smoothing

This setting enables continuous smooth shading for texture-mapped objects. Note that this only affects those objects which are intended to be smooth – most particularly it affects the way the terrain is rendered. We've found that disabling this doesn't affect the performance of most accelerators that much, but your mileage may vary.

Texture Filtering

This feature is used to improve the rendering of texture-mapped objects. When filtering is on, texture maps look less "chunky" but appear a bit blurry to some people. Some accelerator cards exact a significant performance penalty for filtering, so you may get a decent performance boost by turning this off.

Sub Pixel Filtering

This technique is used to improve the accuracy of the texture mapping process and can, like filtering, cause some loss of performance. This check box allows you to disable Subpixel Correction.

Alpha Blending

This feature allows some types of transparency and translucency effects. These are used in PANZER COMMANDER for shadows, dust and the like. Disabling this may give you a slight performance improvement on some 3D accelerators.

Fog Effects

Atmospheric effects are one of the most interesting capabilities of current 3D accelerators and can significantly enhance the visual experience. Unfortunately, it can also slow performance on some video cards. Disabling this feature may improve performance on your accelerator.

Dithering

Most 3D accelerators operate most efficiently with a 16-bit display. Unfortunately, this isn't sufficient color resolution to prevent banding and other artifacts for certain types of imagery. Dithering improves the quality of such imagery at some cost in performance. Turning dithering off may improve the performance of your 3D accelerator.

Palettized Textures

The rendering engine in PANZER COMMANDER attempts to conserve video RAM by storing texture maps in an 8-bit format, if the video card supports this. This can improve performance by reducing the number of textures that need to be moved onto the card for each video frame. Unfortunately, this format can itself cause performance problems on some video cards. Turning this off disables the use of 8-bit textures and may improve performance on some older 3D accelerators.

Color Key Textures

This is less of a performance setting than a visual accuracy setting. Some accelerators support the ability to render texture maps using a color key to mask off certain areas of the texture. PANZER COMMANDER uses this feature to render puffs of smoke and other imagery with irregular edges. Unfortunately, some drivers erroneously report this ability when in fact it is not supported. If you see imagery in the simulator with black, squared-off edges (smoke for example) then disabling this setting may correct the problem.



PLAYING A MULTIPLAYER GAME

PANZER COMMANDER allows multiple player missions using the IPX or TCP/IP protocols or over the Internet. The game also has a head-to-head play while on a mission feature.

PANZER COMMANDER uses Microsoft's DirectPlay to make sure that your network adapter is supported. Most are, so this won't normally be a problem.

Network Protocol Selection

Network Protocols are the "languages" that computers use to talk to each other. PANZER COMMANDER supports the IPX and TCP/IP protocols commonly used for local area networks and for computers linked to the Internet. While you can play over the Internet, we can't guarantee good performance. See *Network Troubleshooting* on page 32.

You first want to make sure that the network is configured to use the IPX or TCP/IP protocols. If you are not sure, see the next section which simply tells you how to set the network protocol on your computer.

Verifying the Presence of IPX or TCP/IP

To find out if your computer's network is configured to use IPX or TCP/IP, open your Network Control Panel from your Windows 95 Start menu. To see how to do this, we recommend reading the Windows 95 Help feature for information on the Network Control Panel. You want to have both IPX and TCP/IP installed before attempting to set up a multiplayer game.

of the texture mapping process and performance. This check box allows you to

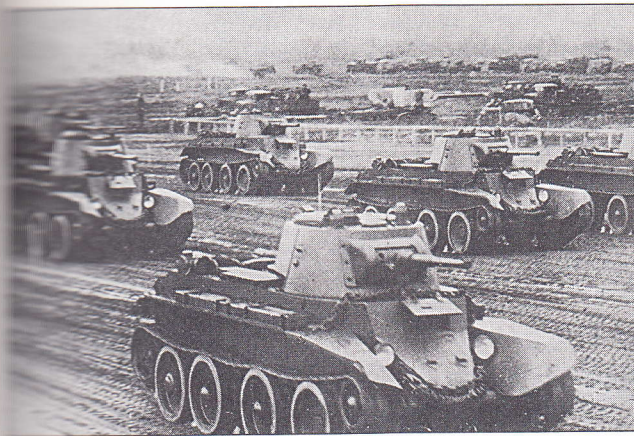
and translucency effects. These are like the like. Disabling this may give you accelerators.

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a 16-bit display. Unfortunately, this and other artifacts for certain types imagery at some cost in performance of your 3D accelerator.

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accuracy setting. Some acceleration a color key to mask off certain feature to render puffs of smoke nately, some drivers erroneously you see imagery in the simulator then disabling this setting may



Weakness in numbers: Pre-War Soviet armor on parade in 1940.

■ PLAYING A MULTIPLAYER GAME

PANZER COMMANDER allows multiple player missions to be played over a local area network using the IPX or TCP/IP protocols or over the Internet using TCP/IP. Some of the missions feature head-to-head play while others involve cooperative play to achieve common mission goals.

PANZER COMMANDER uses Microsoft's DirectPlay technology for its network support. You want to make sure that your network adapters and drivers are compatible with DirectPlay. Most are, so this won't normally be a problem.

Network Protocol Selection

Network Protocols are the "languages" that computers use to communicate with each other. PANZER COMMANDER supports the IPX and TCP/IP network protocols. IPX is a protocol commonly used for local area networks, while TCP/IP is the protocol used by computers linked to the Internet. While you can play PANZER COMMANDER over the Internet, we can't guarantee good performance, due to network speed and latency issues. See *Network Troubleshooting* on page 37 for more information.

You first want to make sure that the network settings on all of your computers are configured to use the IPX or TCP/IP protocols. If you already have a working Internet connection and you want to play PANZER COMMANDER over the Internet, you can probably skip the next section which simply tells you how to verify the presence of a compatible network protocol on your computer.

Verifying the Presence of IPX or TCP/IP

To find out if your computer's network is configured correctly for PANZER COMMANDER, open your Network Control Panel from your Windows 95 Control Panels folder. If you're not sure how to do this, we recommend reading your Windows 95 manual or using the Windows 95 Help feature for information regarding network configuration and the Network Control Panel. You want to have a good understanding of network issues before attempting to set up a multiplayer game.

In the Configuration tab of the Network Control Panel there is a box with a list of network components. Scroll down the list looking for IPX or TCP/IP protocol components. For IPX, you should see something like one or both of the following:

IPX/SPX-compatible protocol -> [your brand] Ethernet Adapter

IPX/SPX-compatible protocol -> Dial-Up Adapter

For TCP/IP protocol, you should see something like one or both of the following:

TCP/IP protocol -> [your brand] Ethernet Adapter

TCP/IP protocol -> Dial-Up Adapter

If you connect to your network through a modem using the Dial-Up Adapter, you can still play PANZER COMMANDER multiplayer games as if you were connected locally. However, there may be some performance degradation due to the slower nature of modems.

If you don't see any of these components in the component list, you need to add at least one of them to your network configuration before you can host or join a multiplayer game. Consult your Windows 95 documentation for the proper procedures.

Which Protocol Should You Use?

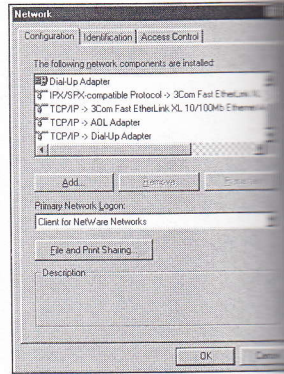
Obviously, if only one of the compatible protocols is present, that is the one you have to use. If you're playing over the Internet, TCP/IP is your only choice. If you're playing over a local network, however, IPX makes it a little easier to set up your game, so you may want to use that if you have a choice. On the other hand, PANZER COMMANDER works fine over a local network using TCP/IP. Ultimately, if you have a choice you should choose the one that works best for you, though determining this may require some experimentation.

Setting up a Multiplayer Game

In every multiplayer game one computer is designated to be the "host." This is simply the computer that starts the game and serves as the central "switchboard" for network messages, also known as "packets."

It is important to choose the right computer to be the host. The best candidates are those computers with the best network connections or the best performance. For example, if you're playing over the Internet and one computer has an ISDN connection while the others connect through modems, the one with the ISDN connection would be the best choice to be the host since it probably has faster access to the Internet. On the other hand, if all computers are connected to a local area network, you should probably choose the fastest computer to be the host.

If you're connecting through the Internet or other TCP/IP network, Windows 95 comes with a command-line program called Ping which allows you to test network performance between any two computers. See the section on *Network Troubleshooting* on page 36 for information about how to use this.



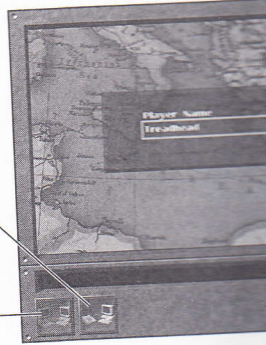
Beginning Your Multiplayer Session

You have two options for taking part in a multiplayer game with your computer as the host. One is being hosted on someone else's computer with a "chat room" feature, which allows you to type messages to them. See the section on *Game Information*.

To begin, choose the Multiplayer option from the Multiplayer Configuration screen, which takes you to help you get your multiplayer game going.

Play game via
TCP/IP connection

Play game via
IPX connection



The first thing you are asked to do is provide a name for your game. This is a screen which uniquely identifies you among the other players. The name should work just fine. PANZER COMMANDER will have to type it in the next time you host or join.

Next you must choose a network protocol for the game. One is labeled IPX and the other is labeled TCP/IP. Choose the protocol you want to use.

IPX



If you choose IPX protocol, you are playing over a local network. IPX is primarily a local network protocol. It knows how to find other games on the network.

TCP/IP



If you choose TCP/IP you are playing over the Internet. This is a four-part number which uniquely identifies you on the Internet. This allows you to play with other players which serves as the host for the game. You must enter an address then click on the "chat" button for a game or a chat session hosted on the Internet in the Session screen.

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modem using the Dial-Up Adapter
ayer games as if you were connected
performance degradation due to the slower

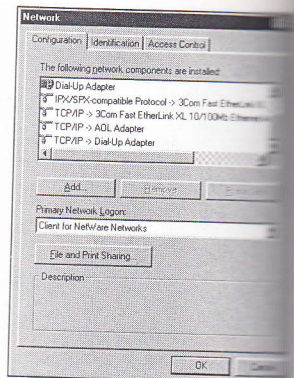
component list, you need to add at least
before you can host or join a multiplayer
n for the proper procedures.

ocols is present, that is the one you
t, TCP/IP is your only choice. If you're
es it a little easier to set up your game.
On the other hand, PANZER COMMANDER
IP. Ultimately, if you have a choice
or you, though determining this may

gnated to be the "host." This is simply
the central "switchboard" for network

be the host. The best candidates are
ctions or the best performance. For
one computer has an ISDN connection
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ocal area network, you should proba-

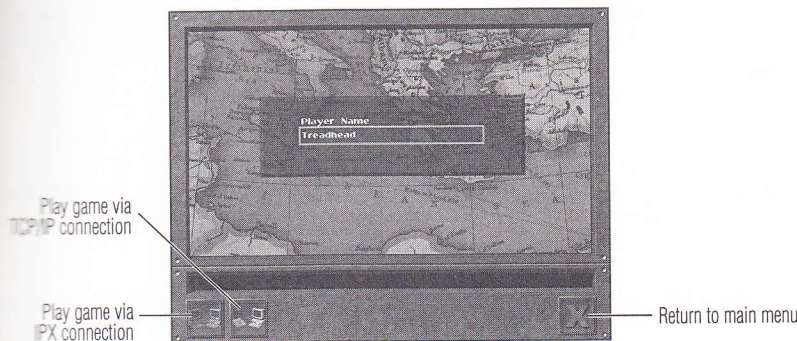
TCP/IP network, Windows 95 comes
h allows you to test network perfor-
tion on *Network Troubleshooting* on



Beginning Your Multiplayer Session

You have two options for taking part in a multiplayer game: you can create a new multiplayer game with your computer as the host, or you can join in an existing game being hosted on someone else's computer. PANZER COMMANDER also provides you with a "chat room" feature, which allows you to communicate with other players by typing messages to them. See the section *Using the Chat Feature* on page 36 for more information.

To begin, choose the Multiplayer option from the Main Menu. This brings up the Multiplayer Configuration screen, which takes you through a series of dialogs designed to help you get your multiplayer game going.



The first thing you are asked to do is provide your player name. This is the name associated with you in the context of the game. Type something in the text box at center screen which uniquely identifies you among the other players. If all else fails, your real name should work just fine. PANZER COMMANDER remembers this name so that you won't have to type it in the next time you host or join a multiplayer session.

Next you must choose a network protocol for your game. Two buttons appear at the lower-left of the screen. One is labeled IPX while the other is labeled TCP/IP. Click one to choose the protocol you want to use.

IPX



If you choose IPX protocol, you aren't asked to enter an address of any kind. IPX is primarily a local network protocol and PANZER COMMANDER knows how to find other games on the local network.

TCP/IP

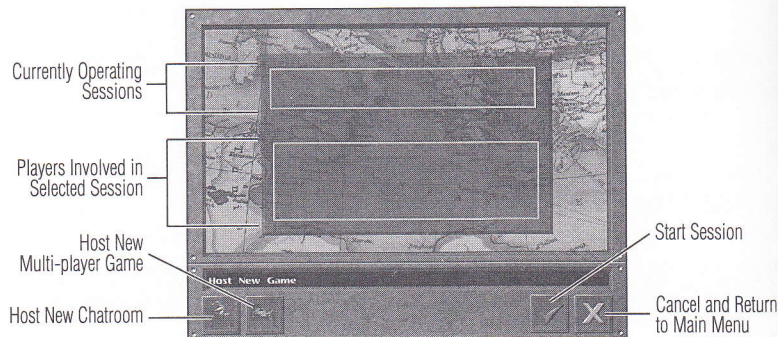


If you choose TCP/IP you are asked to enter an "IP" address. The address is a four-part number which uniquely identifies a remote computer on the Internet. This allows you to specify the address of a remote computer which serves as the host for a game you want to join. If you enter an address then click on the "check mark" button, PANZER COMMANDER looks for a game or a chat session hosted on that computer and, if it finds one, it is listed in the Session screen.

You can also choose to leave the address blank. When you click on the "check mark" button, PANZER COMMANDER looks for a list of games and chat sessions on the local "subnet", which is the part of the Internet "closest" to your computer – usually all of the computers connected to your Internet provider. This works well if all of the people you wish to play with are connected to the same Internet provider. This also yields the best performance for your game since messages are routed over the shortest possible distance. You also want to leave the address blank if you want to host the game on your computer. More about hosting a little later.

Joining an Existing Game or Chat Session

The next screen you see is the Session screen, which contains a two-part list. The top part shows the PANZER COMMANDER games and chat sessions currently operating on the network, if any. When you select a game or a chat session using the mouse, the bottom part of the list shows all of the players currently involved with that game or chat session.



If you wish to join a game or chat session in progress, choose one from this list by clicking on it with your mouse. Once selected, click on the "check mark" button at the bottom of the screen to join. If this is a chat session, the chat screen comes up. If this is a multiplayer game session this launches the simulator and you join the battle in progress.

Hosting a New Game or Chat Session

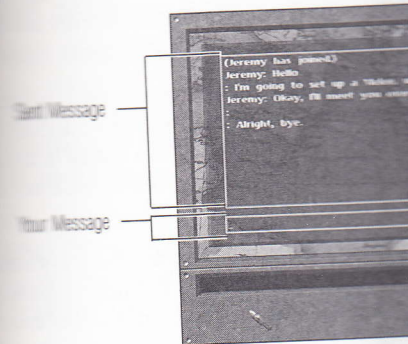
If you decide to host a new game or chat session on your computer, click either the Host New Chat Session or the Host New Game button at the lower-left corner of the Session screen. A text box appears which requires you to enter a name for the game or chat session you are hosting. This is the name which appears in the Session screen for the other players when they look for a game or chat session to join. Try to pick a name for your session which isn't currently being used – this makes it easier for other players to find your game or chat session. Click on the "check mark" button when you are finished entering your session name.

If you have chosen to host a chat session, the Chat Room screen appears and you can begin trading chat messages with other players. See the section below on *Using the Chat Feature* for more information.

When you are hosting a new game, a list of the host's privilege to determine the game. Select one from the list using the mouse. When the other players join your game, all computers via the network, which can be equipped systems. However, this allows you using the Scenario Editor without worrying the other players.

Using the Chat Feature

The Chat Room feature is provided to allow "chat" in cyberspace without the need for communication.



The Chat Room is pretty simple to operate. It contains the chat messages typed in by all players. You can type into the text box into which you type any chat message or clicking on the "check mark" button to join the chat session. When your chat session is over, click on the "X" button at the bottom to return to the Session screen.

In-Game Chat

To chat during gameplay, you must be in a chat session. The chat box appears at the bottom of the screen above the command line. Enter, type your message, and press Enter.

blank. When you click on the "Host" button, a list of multiplayer mission scenarios appears. You have the privilege to determine the mission scenario in which the players do the mission. Choose one from the list using the mouse and click on the "check mark" button. When other players join your game, all of the mission data is transmitted to their computers over the network, which can cause some delays, especially on modem-based systems. However, this allows you to create your own multiplayer scenarios in the Scenario Editor without worrying about how the data is transmitted to other players.

When you click on the "Host" button, a list of multiplayer mission scenarios appears. You have the privilege to determine the mission scenario in which the players do the mission. Choose one from the list using the mouse and click on the "check mark" button. When other players join your game, all of the mission data is transmitted to their computers over the network, which can cause some delays, especially on modem-based systems. However, this allows you to create your own multiplayer scenarios in the Scenario Editor without worrying about how the data is transmitted to other players.



Start Session

Cancel and Return to Main Menu

progress, choose one from this list. Then, click on the "check mark" button to start a chat session, the chat screen comes up. You launch the simulator and you join the chat session.

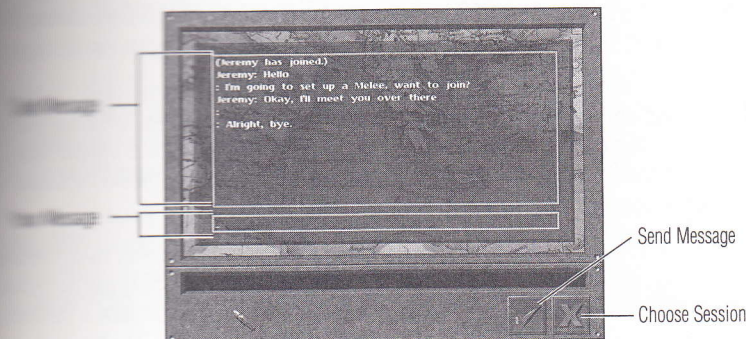
On your computer, click either the Host or Join button in the Session screen. In the Session screen for the other player, try to pick a name for your session. It's easier for other players to find your session if you have a name. Click the "check mark" button when you are finished.

The Chat Room screen appears and you can see the section below on Using the Chat Room.

When you click on the "Host" button, a list of multiplayer mission scenarios appears. You have the privilege to determine the mission scenario in which the players do the mission. Choose one from the list using the mouse and click on the "check mark" button. When other players join your game, all of the mission data is transmitted to their computers over the network, which can cause some delays, especially on modem-based systems. However, this allows you to create your own multiplayer scenarios in the Scenario Editor without worrying about how the data is transmitted to other players.

Using the Chat Feature

The Chat Room feature is provided to allow you and the other players to "rendezvous" in cyberspace without the need for phone calls or other "low tech" forms of communication.



Send Message

Choose Session

The Chat Room is pretty simple to operate. A list box appears at the top which contains the chat messages typed in by all players since you joined. Below this is a text box into which you type any chat messages you want to send. Pressing the Enter key or clicking on the "check mark" button broadcasts this message to everyone who has joined the chat session. When your chat session is finished, click on the Choose Session button at the bottom to return to the Session screen.

In-Game Chat

To chat during gameplay, you must be in the F4 screen. Messages from other players appear at the bottom of the screen above the Status Bar. To send a message, press Enter, type your message, and press Enter again. Your message is sent to all players.

Network Troubleshooting

Multiplayer games can be tricky to set up due to the vagaries of local area networks and the Internet. This section provides some information to help you solve any problems you may encounter in setting up a multiplayer game in PANZER COMMANDER.

Connection Problems

If you're not seeing game sessions in PANZER COMMANDER, there is most likely some kind of network configuration problem. Review your network configuration as described in the section titled *Verifying the Presence of IPX or TCP/IP* on page 32 to make sure that one of these protocols is installed correctly on your computer. Make sure that the game you are trying to join is using the same protocol you are. If you are hosting a game yourself, make sure everyone who may want to join knows which protocol to use.

There may also be a problem with your physical connection. If you are using a local area network, one way to verify your connection is to activate Windows 95 File Sharing on one computer and see if it is visible in the Network Neighborhood window on the others. Consult your Windows 95 documentation if you aren't sure how to do this.

If you are playing over the Internet, the best way to verify your connection is to start your web browser and make sure that it is working properly. If you are on a dial-up connection to the Internet, we recommend activating your connection *before* launching PANZER COMMANDER. This avoids any unpleasant trips to the dialer window in the middle of the game.

If you're trying to play with someone who is on a different subnet – most likely because he uses a different Internet provider than you – chances are one of you has to provide his IP address to the other in order to make the connection. You can obtain this information using a program called WINIPCFG.EXE which is located in your Windows directory. However, you have to establish your connection *before* running this or you may not get the correct address.

We don't recommend playing PANZER COMMANDER over the Internet except with other players whose computers are connected to the same Internet provider or to the same local network as yours for reasons which we outline in the next section.

Performance Problems

The smoothness of game play over a network is highly dependent on the performance of the network hardware and the amount of traffic it must carry. If at all possible, you should play multiplayer games on a small network that is isolated from outside influences.

PANZER COMMANDER is a real time simulation game which generates a modest, but continuous amount of network traffic. Busy networks slow the flow of game data between different computers, resulting in poor responsiveness. If you are playing on a busy local network, your only choice is to isolate those computers on which you want to play. For a variety of reasons this may not be possible. Play only when network traffic is low. In a company environment you may want to play at lunchtime or after everyone else has gone home.

When you are playing over the Internet, performance may have to travel through a number of hops before it gets to the other player's computer. The amount of time it takes for the data to reach the other player is called latency. Even if both computers have fast processors, latency will still be high because of the number and path of hops.

The reason that large latency times are bad is that the game must continuously update the positions of all units. This position data must reach all players at nearly the same time. If you perceive the same conditions at the same time, you can move your tank into a gully to avoid fire from one of the other players. If the other player may still have your tank in sight (from your perspective.) If he fires under the circumstances, though you may perceive that it was impossible.

While PANZER COMMANDER does its best to handle latency, it is best to avoid playing multiplayer games under high latency. This is to play only with other players who are on the same Internet provider or the same local network. This minimizes the steps between your computers, thus minimizing latency.

If you have some question about the latency, you can use the PING.EXE program supplied with Windows 95. It is located in the Windows directory. Use the IP address of the other computer. Use WINIPCFG.EXE, located in your Windows directory, to find the IP address of your computer.

When you have the IP address of one of the other computers, then type PING and the IP address. For example, if the IP address of the machine you want to ping is 202.55.100.20, you would type:

```
PING 202.55.100.20
```

and press the Enter key. You should see something like this:

```
Pinging 202.55.100.20 with 32 bytes of data:
```

```
Reply from 202.55.100.20: bytes=32 time<10ms TTL=32
Reply from 202.55.100.20: bytes=32 time=1ms TTL=32
Reply from 202.55.100.20: bytes=32 time<10ms TTL=32
Reply from 202.55.100.20: bytes=32 time<10ms TTL=32
```

The important thing to note here is the "time" values. Times less than 10ms are very good because this was run on a network with very little traffic. What you see here are all times less than one hundredth of a second. Times less than 10ms are usually good while times less than 20ms are probably acceptable. Anything over 200-300ms is bad for good performance and should be avoided.

due to the vagaries of local area networks, you need some information to help you solve network problems in PANZER COMMANDER.

COMMANDER, there is most likely a problem with your network configuration as described in the PANZER COMMANDER or TCP/IP on page 32 to make sure it is correct on your computer. Make sure that the protocol you are. If you are hosting a game, you must know which protocol to use.

physical connection. If you are using a modem, the connection is to activate Windows 95's Modem in the Network Neighborhood window and make sure you aren't sure how to do this.

way to verify your connection is to make sure it is working properly. If you are on a dial-up connection, activating your connection before making a trip to the dialer window.

a different subnet - most likely because of the chances are one of you has to provide a connection. You can obtain this information which is located in your Windows directory before running this or you may want to

over the Internet except with other players on the same Internet provider or to the same outline in the next section.

highly dependent on the performance of the network. If at all possible, you should isolate from outside influences.

which generates a modest, but consistent flow of game data between the computers. If you are playing on a busy network, use computers on which you want to play. Play only when network traffic is low, such as at lunchtime or after every-

connecting over the Internet, performance can be even more problematic. Your data has to travel through a number of different routers and computers before it reaches the other player's computer. Each step in this chain increases the time it takes for the data to reach that computer. Over great distances, it takes a long time for data to travel from one computer to another. This time delay is called latency. Even if both computers have fast connections to the Internet, latency can be high because of the number and performance of intervening routers.

One of the problems with large latency times is that, in a real-time simulation, it is necessary to continuously update the positions of all of the objects in the game universe. If the data must reach all players at nearly the same time in order for everyone to be under the same conditions at the same time. For example, you might be driving a tank into a gully to avoid fire from one of the other players. If there is high latency, the other player may still have your tank in his sights *after* your tank has reached the gully (from your perspective.) If he fires under these conditions, your tank can be damaged, though you may perceive that it was impossible for him to achieve such a hit.

Even though PANZER COMMANDER does its best to handle latency problems, the best solution is to avoid playing multiplayer games under high-latency conditions. Your best bet for playing is to play only with other players whose computers are connected to the same Internet provider or the same local network. This minimizes the number of routers between your computers, thus minimizing the network latency.

If you have some question about the latency between two computers you can use the `PING` program supplied with Windows 95. Both computers need to be connected to the Internet and you need the IP address of one of the computers to make the test. The `WINIPCFG.EXE`, located in your Windows directory to obtain this information.

When you have the IP address of one of the computers, open up an MS-DOS prompt on the other computer, then type `PING` and the IP Address, and press the Enter key. For example, if the IP address of the machine you want to test is 202.55.100.20, type:

```
PING 202.55.100.20
```

and press the Enter key. You should see something like this:

```
Pinging 202.55.100.20 with 32 bytes of data:
```

```
Reply from 202.55.100.20: bytes=32 time<10ms TTL=32
```

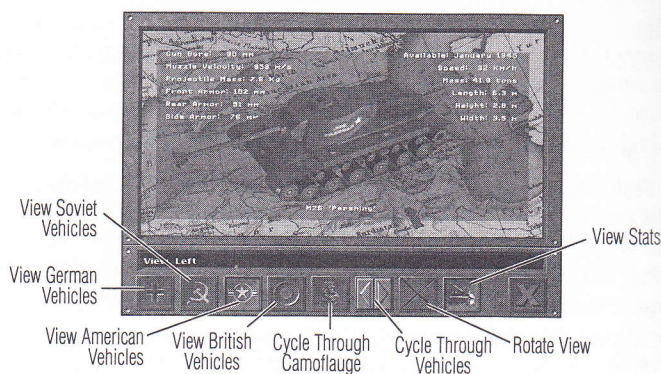
```
Reply from 202.55.100.20: bytes=32 time=1ms TTL=32
```

```
Reply from 202.55.100.20: bytes=32 time<10ms TTL=32
```

```
Reply from 202.55.100.20: bytes=32 time<10ms TTL=32
```

The important thing to note here is the "time" value returned by `PING`. The above times are very good because this was run on a very small Ethernet network with very little traffic. What you see here are all times less than 10 *milliseconds*, or less than one one hundredth of a second. Times less than 100 milliseconds (one tenth of a second) are usually good while times less than 200 milliseconds (one fifth of a second) are probably acceptable. Anything over 200-300 milliseconds is probably too much latency for good performance and should be avoided, if possible.

VIEWING VEHICLE MODELS



PANZER COMMANDER allows you to review the vehicles of all the major powers portrayed in the game. You may want to do this from time to time to brush up on the capabilities of your own vehicles and those of your enemies. Knowing the relative strengths and weaknesses of the vehicles you are fighting is one of the keys to victory in PANZER COMMANDER.

Clicking on the View Vehicles button from the Main Menu brings up the View Vehicles screen. At the bottom of the screen is a row of buttons that allow you to control the vehicle display. The vehicles themselves appear at center screen.

Choose Vehicle Nationality



The four buttons on the lower-left allow you to choose the army whose vehicles you wish to review. You may choose from German, Soviet, American and British forces.

View Vehicle Colors



To the right of that is a Change Color button which allows you to toggle through choices for the coloring of the vehicle. Each vehicle in PANZER COMMANDER can have one of three color schemes: base color, camouflage, or whitewash. The base color is the standard all-over color for that army, usually tan for the Germans and green for everyone else. Camouflage was applied most often by the Germans but was used by the other forces as well. Whitewash was often applied in the winter to make the tank less visible in the snow.

View Next or Previous Vehicle



Next is a pair of arrow buttons which allow you to change which vehicle is displayed. When you click on the right-arrow button, you get the next vehicle in the order in which it appeared in the war. Thus, as you advance through the list you will see vehicles and variants which appeared later in the war. Clicking the left-arrow button has the opposite effect and shows you earlier vehicles.

Vehicle Rotation



The triangular buttons arranged in a circle around the vehicle are used to rotate the view horizontally around the vehicle. The left and right triangle buttons increase and decrease the angle of view of a vehicle as well.

Vehicle Statistics



This button toggles the information displayed on the right side of the screen. It is most important to know the velocity of its main gun and its armor thickness for a good overview of how to make use of the vehicle. The button restores the vehicle to its larger size and angle.

When you are done looking at vehicles, the Main Menu button returns you to the Main Menu screen.

SIMULATION CONCEPTS

World War II saw the rapid development of tanks. PANZER COMMANDER attempts to accurately reproduce the tanks available during this conflict. This section discusses the equipment and the interactions between tanks. It also discusses platoon operations and tank tactics.

Crew Positions

Successful operation of a World War II tank depends on the crew and this is the responsibility of the player. PANZER COMMANDER simulates the interaction among the tank crew members' abilities during a campaign. If you're playing, make sure that your crew stays intact because they are directly affected by their ability levels. Like the crew members of your other tanks alive.

In PANZER COMMANDER, each tank has a commander, depending on model, a bow machine gunner, and a loader. Each crew function except for the commander is displayed on the screen on which is displayed useful information. You can choose to operate all of the tank's systems yourself or take advantage of the abilities of your crew.

Historical Note: Some tanks of World War II had a commander and crew members outlined above. In some cases, the commander or loader and, occasionally, no bow machine gunner, driver and loader.



View Info
Cycle Through Vehicles
Rotate View

the vehicles of all the major powers. This from time to time to brush up on the use of your enemies. Knowing the main force you are fighting is one of the keys to success.

The Main Menu brings up the View Vehicles screen, which shows a list of all the vehicles available during this conflict. This section details the operation of the tank and its crew members and the interactions between the tank commander and his crew. It also shows platoon operations and tank tactics.

to choose the army whose vehicles you want to use. The Main Menu brings up the View Vehicles screen, which shows a list of all the vehicles available during this conflict. This section details the operation of the tank and its crew members and the interactions between the tank commander and his crew. It also shows platoon operations and tank tactics.

color button which allows you to toggle the color of the vehicle. Each vehicle in PANZER COMMANDER has a set of color schemes: base color, camouflage, or standard all-over color for that army, and so on. Camouflage was applied most often to the vehicles of the German and Soviet forces as well. Whitewash was often used on the vehicles of the British and American forces in the snow.

which allow you to change which vehicle is displayed. The left and right triangle buttons cycle through the vehicles while the top and bottom triangle buttons increase and decrease the view elevation respectively. When you change the angle of view of a vehicle, all other vehicles are displayed from the same angle.

The button toggles the information display. When on, the image of the tank is surrounded and valuable statistics for that vehicle are displayed to either side of it. It is most important to note the vehicle's armor ratings, the muzzle velocity of its main gun and its maximum speed. See the section on tank tactics for a good overview of how to make use of this information. Clicking the button returns the vehicle to its larger size and removes the information.

When you are done looking at vehicles, the Main Menu button at the lower-right corner of the screen returns you to the Main Menu screen.

SIMULATION CONCEPTS

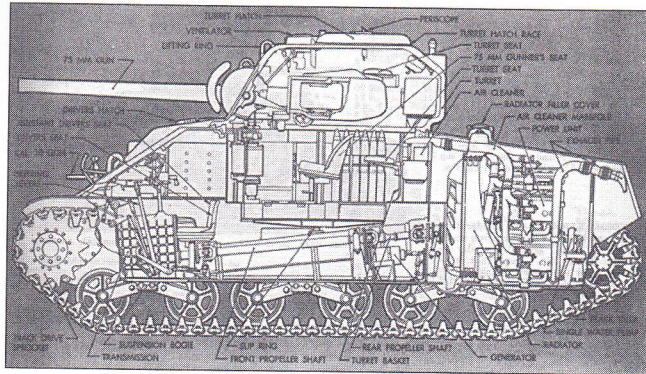
World War II saw the rapid development of tanks and tank combat tactics. PANZER COMMANDER attempts to accurately reproduce the capabilities of the many varieties of tanks available during this conflict. This section details the operation of the tank and its crew members and the interactions between the tank commander and his crew. It also shows platoon operations and tank tactics.

Crew Positions

Successful operation of a World War II tank requires smooth cooperation among the tank crew and this is the responsibility of the tank's commander. PANZER COMMANDER simulates the interaction among the tank crew and the development of the crew members' abilities during a campaign. If you're playing in campaign mode, you want to make sure that your crew stays intact because their performance in the simulation is directly affected by their ability levels. Likewise, as platoon leader you want to keep the crew members of your other tanks alive.

In PANZER COMMANDER, each tank has a commander, a driver, a loader, a gunner and, depending on model, a bow machine gunner, each with specific responsibilities as detailed below. Each crew function except for the loader is associated with a position screen on which is displayed useful information pertaining to that function. You can choose to operate all of the tank's systems yourself, but you may find that it's better to take advantage of the abilities of your crew members.

Historical Note: Some tanks of World War II didn't actually have the full complement of crew members outlined above. In some cases the commander also served as gunner or loader and, occasionally, no bow machine gun was present. For the sake of simplicity, Panzer Commander assumes that all tanks have at least a commander, gunner, driver and loader.



*Schematic of
an M4A3
Sherman.*

Commander

The tank commander is responsible for controlling the tank's operations and coordinating the efforts of the crew. In addition, the commander is responsible for achieving the objectives assigned by his superiors. The commander's cupola screen contains functions specific to the commander's tasks and can be brought up with the F4 key.

Driver

The driver is responsible for driving the tank as directed by the commander. A skilled driver better anticipates terrain difficulties and more efficiently guides the tank between way points. The driver's position screen is brought up with the F5 key.

Gunner

The gunner's responsibility is aiming the main gun and delivering the tank's ordnance to the target. A skilled gunner hits the target more accurately and more quickly lays the gun on the target. In addition, most tanks have a machine gun coaxial with the main gun for which the gunner is also responsible. The gunner's position screen can be displayed using the F6 or F7 key.

Loader

The loader is responsible for reloading the main gun between firings. He is also responsible for choosing the correct ammunition type as ordered by the commander. An effective loader is able to reload the main gun more quickly.

Machine Gunner

The machine gunner operates the bow machine gun against infantry and other designated targets. An effective machine gunner more consistently and efficiently hits the targets assigned to it. The bow machine gunner's position can be displayed using the F8 key.

Changing the View

As the COMMANDER you are allowed to change the view of the tank to different positions relative to your tank and the terrain. The following is a summary of the different view positions and how to activate them:

F3 - External tank view. In this view the camera always follows the tank. This view is not available at higher realism settings. Activate using the following keystrokes:

- Keypad 7 - Reduce the camera elevation.
- Keypad 9 - Increase the camera elevation.
- Keypad 1 - Rotate camera clockwise around tank.
- Keypad 3 - Rotate camera counterclockwise around tank.

F2 - Commander's cupola view, unbuttoned. This is the view from the commander's cupola with the hatch open and the commander's character more vulnerable to injury should the tank be hit. You should be careful how you use it. You can rotate the view using the following keystrokes:

- Keypad 1 - Pan to the left.
- Keypad 3 - Pan to the right.

F3 - Commander's cupola view, with binoculars. This is the view from the unbuttoned commander's cupola, but through a pair of binoculars which can allow you to see further. From the other unbuttoned view, this can be panned.

F4 - Commander's cupola view, buttoned up. This is the view from the cupola, similar to the unbuttoned view, but through a vision slit or periscope. Although your view is more restricted, the commander is safer. Plus from the buttoned up view you can see the commander's map which gives general terrain features and mission. During Multiplayer games, this is the view.

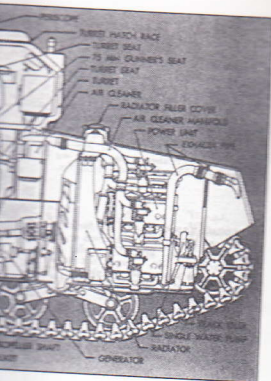
F5 - Driver's view. This is the view you would have from the driver's position. A set of gauges which is discussed in the section on the driver starting on page 43.

F6 - Gunner's view. This view provides access to the main gun and the coaxial machine gun, if present. It also has a ranging reticle and 2.5x magnification for sighting. This view provides more information about this in the section on the gunner starting on page 45, and *Operating the Coaxial Machine Gun*.

F7 - Gun sight view. This is a 5x magnified gun sight view. It allows you to get more distant objects. The Range Finder is also visible. See *Range Finder* starting on page 47 for more information.

F8 - Bow machine gun view. This view allows you to see from the front of the tank.

V - This moves the view to the next tank in your line of sight. It allows you to see action from the vantage point of any of your tanks.



Schematic
on WAP
Schematic

controlling the tank's operations and movement. The commander is responsible for achieving the tank's mission. The commander's cupola screen contains various information and can be brought up with the **F4** key.

The tank as directed by the commander. A similar screen is brought up with the **F5** key.

The main gun and delivering the tank's ordnance. The commander is responsible for achieving the tank's mission. The commander's cupola screen contains various information and can be brought up with the **F4** key.

the main gun between firings. He is also responsible for achieving the tank's mission. The commander's cupola screen contains various information and can be brought up with the **F4** key.

machine gun against infantry and other targets. The commander is responsible for achieving the tank's mission. The commander's cupola screen contains various information and can be brought up with the **F4** key.

Changing the View

As a commander you are allowed to change the camera view to a number of different positions relative to your tank and the other tanks in your platoon. The following is a summary of the different view positions and the keystrokes which control them:

Commander's tank view. In this view the camera always points towards your tank. This view is not available at higher realism settings. You can reposition the camera using the following keystrokes:

- Keypad 7 - Reduce the camera elevation.
- Keypad 9 - Increase the camera elevation.
- Keypad 1 - Rotate camera clockwise around the tank.
- Keypad 3 - Rotate camera counterclockwise around the tank.

Commander's cupola view, unbuttoned. This is the view you would have from the commander's cupola with the hatch open and your head sticking out. This makes your character more vulnerable to injury should you come under fire, so you should be careful how you use it. You can rotate this view to scan the horizon using the following keystrokes:

- Keypad 1 - Pan to the left.
- Keypad 3 - Pan to the right.
- Keypad 7 - Pan up.
- Keypad 9 - Pan down.

Commander's cupola view, with binoculars. This is another view you would have from the unbuttoned commander's cupola, except this time you are viewing through a pair of binoculars which can allow you to see objects farther away. Like the other unbuttoned view, this can be panned using the same keystrokes.

Commander's cupola view, buttoned up. This is the view from the commander's cupola, similar to the unbuttoned view, but you are looking through a smaller vision slit or periscope. Although your view is more constricted here, your tank commander is safer. Plus from the buttoned up view, you are able to see the commander's map which gives general terrain features, and your way points for the mission. During Multiplayer games, this is where chat occurs.

Driver's view. This is the view you would have from the driver's seat. It includes a set of gauges which is discussed in the section, *Driving and Basic Navigation*, starting on page 43.

Gunner's view. This view provides access to the basic gunnery functions for the main gun and the coaxial machine gun, if present. It provides you with an aiming reticle and 2.5x magnification for sighting targets and laying the gun. There is more information about this in the sections *Operating the Main Gun* on page 45, and *Operating the Coaxial Machine Gun* on page 52.

Gun sight view. This is a 5x magnified gun sight which allows you to better target more distant objects. The Range Finder is available in this view. See *Using the Range Finder* starting on page 47 for more information.

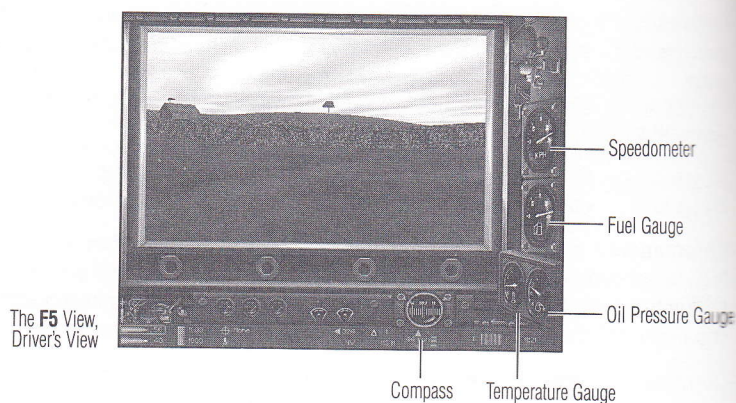
Bow machine gun view. This view allows you to operate the bow machine gun.

V - This moves the view to the next tank in your platoon. This allows you to see the action from the vantage point of any of your platoon members.

Driving and Basic Navigation

The tank can be driven from any position using the **arrow** keys. The left and right arrow keys steer the tank and the up and down arrow keys increase and decrease the throttle respectively. The down arrow also puts the tank into reverse. A bar graph indicator in the center of the status bar at the bottom of the screen shows the current throttle position. Use the **Delete** key to engage the brakes. This also reduces the throttle setting and places the transmission in neutral. To bring the tank to a complete stop, you may have to press the Delete key down several times.

You can also use a joystick to drive the tank. Pull the stick left and right to steer the tank. Push forward on the stick to increase the throttle and pull back on the stick to reverse the throttle.



Pressing the F5 key brings up the driver information display which incorporates a number of useful gauges grouped around the driver's vision slit, and provides you with a view from the "driver's seat" of your tank. The gauges are:

Speedometer: This tells you how fast the tank is currently moving.

Fuel Gauge: This tells you how much fuel you have left. If you run out the scenario ends. In general, the faster you are driving the less efficiently the tank is using fuel. Depending on how far you must travel and how much fuel you have you may have to drive more slowly to complete an operation.

Temperature Gauge: This tells you how hot the engine is running. Most World War II tanks were not designed to be run flat out for long periods of time. If you do so, your engine may overheat – especially in desert scenarios. If this happens your engine shuts down and the scenario ends.

Oil Pressure Gauge: This tells you the engine's current oil pressure. This can be used to gauge the general condition of your engine. When an engine is running too hot or if it has suffered damage, the oil pressure is lowered. If you run the engine too long under low oil pressure conditions, it can fail and end the scenario.



Navigation and Way Points

Most of the single player and campaign missions are defined by way points for your units to follow. General objectives. However, you're performing the mission and many times you have to in order to complete the mission.

The status bar shown at the bottom of the screen indicates the next way point. An arrow symbol indicates you to turn left, while an arrow symbol indicates you to turn right. When the compass heading is 000° it means that you are exactly on course.

You can order your driver to proceed to the next way point in mind that this feature always goes to the next way point on the map. If you bypass a way point, then press the A key, your driver will turn the tank back to the way point before going on to the next.

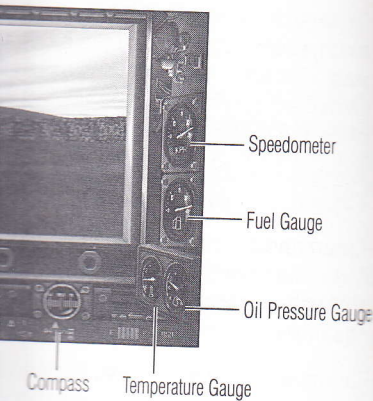
Tips for Successfully Driving Your Tank

World War II tanks varied widely in their capabilities. Tanks like the Matilda II could achieve a maximum speed of 80 kph. Many of the tanks required you to achieve your objectives with a minimum of fuel. To balance the tank's performance capabilities against this.

PANZER COMMANDER assumes that all of the tanks are very slow. You can generally climb very slowly. In addition, if the tank is rolling down an incline, it can topple, leaving you in a vulnerable position.

using the **arrow** keys. The left and right arrow keys increase and decrease the speed of the tank. The up and down arrow keys increase and decrease the throttle. A bar graph at the bottom of the screen shows the current throttle position. This also reduces the throttle to neutral. To bring the tank to a complete stop, press the **space** key several times.

tank. Pull the stick left and right to steer. Press the **space** key to increase the throttle and pull back on the stick to decrease the throttle.



information display which incorporates a driver's vision slit, and provides you with the following information. The gauges are:

The tank is currently moving.

You have fuel left. If you run out the scenario ends. The less efficiently the tank is using fuel, the less fuel you have you may have to stop to refuel.

The engine is running. Most World War II tanks had a limited range of long periods of time. If you do so, your mission fails. If this happens your engine shuts down.

The tank's current oil pressure. This can be used to determine if the engine is running too hot or if it is overheating. When an engine is running too hot or if it is overheating, it can be damaged. If you run the engine too long and it overheats, the scenario ends.



Even the terrain was an enemy: German assault guns in the mud, 1943

Navigation and Way Points

Most of the single player and campaign missions in PANZER COMMANDER include a set of way points for your units to follow. Generally these are designed to take you to your mission objectives. However, you're perfectly free to deviate from this suggested course and many times you have to in order to gain some tactical advantage.

The status bar shown at the bottom of the screen shows you which way to turn to reach the next way point. An arrow symbol to the left of the compass heading is telling you to turn left, while an arrow symbol to the right of the compass heading is telling you to turn right. When the compass heading is bracketed by arrow symbols, like this: **<42>** it means that you are exactly on course for the next way point.

You can order your driver to proceed to the next way point by pressing the **A** key. Keep in mind that this feature always goes to the next way point, regardless of where you are on the map. If you bypass a way point and drive several hundred meters past it, then press the **A** key, your driver will turn the tank around and return to that way point before going on to the next.

Tips for Successfully Driving Your Tank

World War II tanks varied widely in their performance capabilities. British infantry tanks like the Matilda II could achieve a mere 24 kph while the American M18 tank destroyer could reach 80 kph. Many of the mission scenarios in PANZER COMMANDER require you to achieve your objectives within a certain amount of time. You have to balance the tank's performance capabilities, fuel usage and the likelihood of an engine failure against this.

PANZER COMMANDER assumes that all of these vehicles have similar capabilities with respect to inclines. You can generally climb an incline of 45 degrees or less – albeit, very slowly. In addition, if the tank is rolled too far to the left or right due to its position on an incline, it can topple, leaving you stranded and ending the scenario.

While tanks are designed to traverse all sorts of rough terrain, it is best to stay on roads when they are available. Your tank is able to move faster over a road than off-road, and roads are obvious places for ambushes and the enemy will take advantage of this fact. Your tanks also have to go off road frequently in order to flank an enemy holding a defensive position. Off road travel increases the risk that your tank will take damage to its wheels or treads. You need to reduce your speed under such conditions or risk the catastrophic failure of one of your tanks.

Rivers in PANZER COMMANDER are impassable. If you attempt to cross a river, the tank gets swamped and the treads get stuck, leaving you stranded and ending the mission. To cross a river, you need to find a bridge. It's always a good idea to secure a bridge head as soon as you can if you need to get across a river to achieve one of your mission objectives.

Finally, a note about evasion. A tank moving over open ground or at the top of a hill is a highly visible target. If you have to move over such terrain, do it as quickly as possible and try to dodge frequently. You may not know that an enemy has you in his sights until he fires; by then it is too late for you to do anything about it. It is much better to find routes down gullies, behind hills and well back from exposed ridge lines. The less chance the enemy has of spotting you, the more chance you have of spotting him first and destroying him.

Commanding the Driver

While you may choose to drive your tank manually, you may also order the driver to proceed to the next way point using the A key. The driver then attempts to find the best route to that way point, looking for bridges as necessary to cross rivers and avoiding impassable terrain. When the driver is driving, you may increase or decrease the tank's speed using the up and down arrows or by pushing up or down on the joystick, but if you attempt to steer the tank using the left and right arrows or the joystick, the driver returns control to you and you are responsible for guiding the tank.

Operating the Main Gun

The tank's main gun is its most important and most formidable weapon. All WW2 tanks depicted in PANZER COMMANDER have main guns capable of firing armor-piercing rounds at their enemies. However, the relative power of their main guns vary greatly from model to model, especially between early war and late war models. The German Tiger tanks, for example, gained their notoriety from the famed 88mm gun, which was more than capable of penetrating most armor of the day.

As the war progressed, armor thickness and quality improved, necessitating an increase in the bore sizes of tank main guns. Tank battles tended to be short and intense - especially when one side had a decisive advantage in armor thickness and main gun power. Early in the Soviet campaign, the Germans were frequently thwarted by the superior armor and larger guns of the Soviet T-34 and KV-1 tanks. Later in the war, British and American tank forces took fearsome losses going up against the superior Panther and Tiger tanks fielded by the Germans.

Armor-Piercing and High Explosive Rounds
Armor-piercing rounds were effective against tanks and armor-piercing rounds were much more useful against buildings. High explosive rounds were similar to the high-explosive rounds used in the "2-pounder" and "6-pounder" anti-aircraft guns. They were at a disadvantage for certain types of Soviet tanks with their huge 122mm main guns with massive high-explosive shells. The main gun attempts to accurately replicate the behavior of a real tank. In addition, the load outs vary according to mission objectives. Supply problems may also affect mission objectives. In general, it's best to maintain a high level of readiness.
The main gun is rotated along two axes for the elevation and depression of the gun barrel and directly related to the horizontal rotation of the tank. The main gun barrel travels. You aim the tank's main gun to lay the gun on its target. The following functions:

Control 4 - Traverse left
Control 5 - Traverse right
Control 2 - Increase elevation
Control 3 - Decrease elevation
In addition, you can hold down the Shift key to increase the adjustment of the aim.

While you can control the traversal and elevation of the tank, the gunner's position and the gun sight allow you to aim the gun much more precisely. Using the F6 and F7 keys respectively) you aim the gun with your joystick. This can potentially be easier or harder of taste.

Before we discuss how to lay the gun, you need to know how the gun works. When enemy units appear, one is marked as a target. Target selection serves three functions: First, it identifies enemy units in your field of view. Second, it allows you to assign your gunner and other platoon members to the target. Third, it serves as a sight indicator for the gunner.

We'll discuss the first two uses of the target selection in *Commanding Your Gunner* and *Issuing Platoon Orders* on selecting targets.

High Explosive Rounds

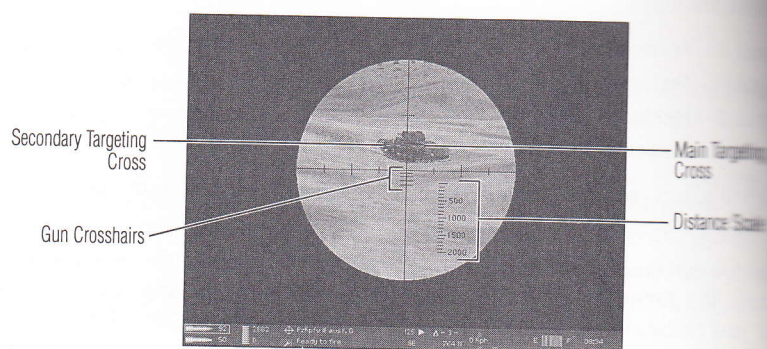
and quality improved, necessitating adjustments. Tank battles tended to be short and decisive, with the Germans frequently thwarting the Soviet T-34 and KV-1 tanks. Later in the war, the Germans suffered heavy losses going up against the Soviets.

We'll discuss the first two uses of the target selector in the sections on *Commanding Your Gunner* and *Issuing Platoon Orders*. For now, we'll concentrate on selecting targets.

If more than one enemy unit is in your field of view, you can select another target by using the **Tab** key. You can return to the first target by continuing to press the **Tab** key until the selection indicator marks that unit. You can also use the **Caps Lock** key to move backwards through the list. The **N** key selects the target nearest your unit, and the **S** key selects a target that is in your gun sight. Naturally, you need to be in the gunner's position or the gun sight view (**F6** or **F7**) to use this command.

Normally, the target selector only marks enemy units that are within identification range of your tank. However, the **S** key allows you to target objects outside of identification range or which are not identified as enemy units, such as buildings, trees and the like. This can be handy if you need to blow up a target for some reason, or if you want to use your range finder to dial in your gun on a particular area.

The range finder is integral to the gun sight view and allows you to accurately determine the distance to a particular target. Distant targets may require you to raise the elevation of the gun in order to compensate for the distance the shell drops over the distance, otherwise, your shots will fall short of the target. With the range finder, you can determine how much to compensate for the distance, allowing you to accurately aim your gun on the target.

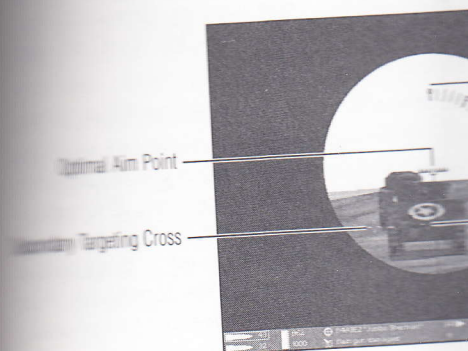


Using the Range Finder

Using the range finder is fairly straightforward, but may require some practice. If you have used an old style "range finder" camera this procedure should be pretty familiar to you. There are two parts to the range finder gauge. The first and most obvious is a numeric scale in the lower right or upper right quadrant of the gun sight which includes a red needle that moves up and down when you change the range setting. This shows you the range to the target when set properly. It is marked off in hundred meter increments between zero and two thousand meters.

The other part of the range finder is a little trickier. When you look through the gun-sight you see that targets which have been identified bear two of the distinctive green or red targeting crosses rather than the single cross you would see in any other view. The second cross is a darker shade and appears to the left or right of the main targeting cross, depending on the range finder setting.

How do you do with this information? This depends on which country's tanks you are using. For German and British tanks, gun sight crosshairs are used. Lining up the target with the main crosshairs and the shell drop were not a factor. Below the main crosshairs are smaller horizontal marks which crosshairs correspond to distances of 500, 1000, 1500 and 2000 meters. The ammunition load set for your main gun is also shown. For example, if you have determined the range to a target, you line it up with the second of these marks and then you have the target lined up, pressing the **Space Bar** to fire the main gun.



For German and Soviet tanks, the targeting crosshairs move up and down with the range finder setting to target at that range. To hit the target, all you need to do is line up the upper tip of the center crosshairs and line up the upper tip of the center crosshairs to the left and right are provided for a moving target. The targeting reticle is called a "moving target" reticle. Note that since high-explosive rounds require more elevation correction than armor piercing rounds, when you get lined up, pressing the **Space Bar** or **Joy**



If your first round misses it is often because it falls short of the target. This is where your gun sight is provided with a range finder and graduated cross hairs, to help you adjust your aim. In general, the further the target the higher the required elevation. Getting it right the first time takes practice, but can make the difference between surviving a battle and getting shredded by enemy fire.

Several things can happen when you fire a gun, depending on the target and the type of round fired at it. If the target is an armored vehicle, a high explosive round will probably not destroy it, but may cause some damage depending on where it lands. A direct hit on a tank's tread or damaged road wheels can partially disable a tank, but it will still come back at you if it can.

An armor piercing round will probably destroy a tank – if it penetrates the armor. This can be a big *if* depending on what type of vehicle you are commanding and what kind of target you are shooting at and on the range and position at which you are shooting. Most tanks are more vulnerable in the sides and back than in the front. If you are in an M4A3 Sherman and your target is a Tiger, you want to try and outflank him to get off a side shot or ambush him to get off a rear shot. Dueling toe-to-toe in this situation is not advised as your AP rounds are likely to just bounce off his formidable front armor. Of course, at point blank range you probably have a chance, but you probably won't be able to get that close.

Armor damage is not cumulative: a shell either penetrates or it does not. If it does not, the armor's effectiveness isn't reduced in any way. If the shell penetrates, the target will probably be destroyed, but if it isn't, the armor effectiveness on the side that is hit is greatly reduced. A second shot in the same place will certainly destroy the target.

While armor piercing rounds can destroy most soft-shelled vehicles, you're probably better off using your coaxial machine gun for such targets and reserving your AP rounds for more deadly foes. AP rounds also damage buildings, but often they simply poke holes in them. Use your high-explosive rounds on these targets or your coaxial machine gun, which cumulatively damage the target until it collapses. Once a round is fired, your loader automatically feeds a new round of the same type into the main gun.

United States
Soviet
gondie
showing the
importance
worker
war effort.

Simulation Types

change what type of round is being fired. The loader has a toggle between AP and HE rounds. After firing the main gun, the loader will fire a round that isn't desired. If you are already in fire, it may take him up to 10 seconds to fire. While you may want to fire a particular round, it might make sense to fire a target of opportunity and then fire a round that is a target of opportunity.

The loader displays information about the target, including the different types of rounds. The loader will fire a high explosive round while the other rounds are in the loader. This scheme was actually used in the war. The loader was used to fire a round with a white tip were used to fire a round. The number of rounds of that type is the number of rounds of that type. If the number is less, the number turns yellow. If the number goes red, indicating that the loader is in danger, your loader starts loading from the loader.

Simulation on Targeting

When you are unable to lay your gun on a target, your gun has a limited range of elevation. The only things that can be done to a more favorable vantage or wait for a better shot. This can be very frustrating if you have a better advantage of it. Experience teaches you to learn target angles.

The elevation and traversal speed can vary. The Germans had some of the most powerful elevation and traversal on these vehicles. The best strategy is to learn your vehicle's elevation and traversal. The best strategy is to learn your vehicle's elevation and traversal.

Moving and Shooting

Unlike their modern counterparts, World War II tanks had no stabilizing systems, though some efforts were made. A system, traveling down rough terrain and firing, is impractical. You may waste a lot of ammunition. Most successful commanders adopted a strategy of firing in cover punctuated by some moments to track the target.



United States
Soviet
greatest power
situation
important
worker
war effort

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Ammunition Types

When you change what type of round is being loaded into your main gun, use the
loader to toggle between AP and HE rounds. The best time to change
is immediately after firing the main gun. This allows the loader to avoid wasting
a round that isn't desired. If you ask the loader to change loads *after* a
round is already in fire, it may take him up to twice as long to unload the old round
and load the new one. While you may want to do this if you are low on ammunition
in a particular danger, it might make more sense to fire the round that's
already in a target of opportunity and *then* order a different load.

The loader displays information about ammunition to the far left. There are two
indicators representing the different types of shells; the one with the white tip repre-
sents high-explosive rounds while the other represents armor-piercing rounds.
Warning Note: This scheme was actually used by German tankers in World War II.
The indicator with a white tip were used to distinguish high-explosive rounds. Next
to the indicator is the number of rounds of that type remaining. If the number of rounds
is five or less, the number turns yellow, warning you that you are low on ammo.
If the number goes red, indicating that you are out of that type of ammo. When
you are out of a particular type of ammo, your loader starts loading from the remaining ammunition type.

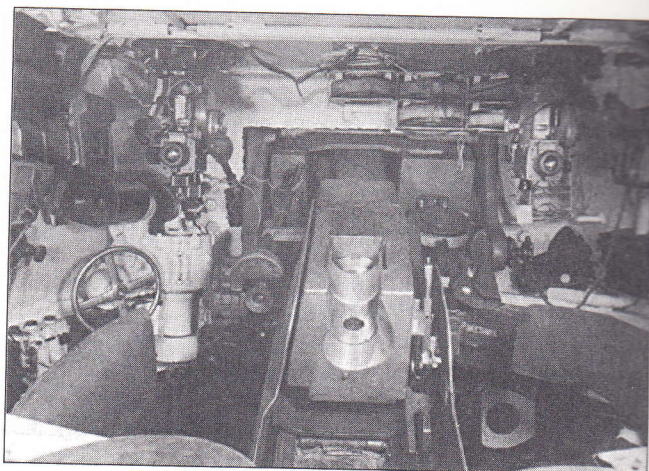
Limitations on Targeting

Occasionally you are unable to lay your gun on a target. Usually this is because
your main gun has a limited range of elevation and cannot be elevated or depressed
enough to sight the target. The only things you can do in a case like this is to move
your tank to a more favorable vantage or wait for the target to move into range of your
gun. This can be very frustrating if you have found a good "hull down" position and
cannot take advantage of it. Experience teaches you the best positions to assume for
various target angles.

Traversal and elevation speed can vary widely from model to model. Though
the Germans had some of the most powerful guns in their late war tanks, speed of
elevation and traversal on these vehicles was only mediocre, while the American
tanks, though under gunned, could lay their main guns on the target more quickly.
The best strategy is to learn your vehicle's strengths and weaknesses and make
the most of them.

Moving and Shooting

Unlike their modern counterparts, World War II tanks had no functional gun
stabilizing systems, though some efforts were made in this direction. Without such
a system, traveling down rough terrain and accurately aiming the main gun is pretty
impractical. You may waste a lot of ammo proving this to yourself, but your enemies
won't. Most successful commanders adopt a strategy involving quick dashes between
cover punctuated by some moments completely stopped to allow the gunner
to track the target.



Close-up view of the main gun interior of a T-34 tank.

Commanding the Gunner

While it can be very satisfying to lay the gun on enemy targets and blow them away, the commander must assume overall responsibility for the tactical situation. However, in a combat situation may not leave you with enough time to aim the gun and issue orders to other crew and platoon members.

Your crew includes a gunner who is quite capable of aiming the main gun with a fair amount of accuracy, which improves over time the longer he survives. It is your responsibility to pick targets for him, order the gun load (AP or HE) and issue the fire order. It is his responsibility to keep the gun tracking the target until ordered to fire. He does so until you order otherwise or until the target passes out of view, even when the tank is moving.

Use the target selection mechanism to pick a target for your gunner. This is discussed in detail in the previous section. To summarize, the **Tab** key and **Caps Lock** key cycle through the available targets, while the **N** key selects the nearest target and the **S** key selects the target in your gun sight. To order your gunner to track and shoot the selected target, press the **T** key.

The status bar located at the bottom of the screen contains some valuable targeting information. First, the gun sight icon tells you the status of the main gun. When it is green, the gunner has no target and isn't tracking anything. When it is yellow, the gunner is traversing or elevating the main gun. When it is red, the gunner has the target in his sights and is ready to fire.

Next to the gun sight icon is the target indicator, which is a text description of the selected target. This can be very useful when prioritizing your fire for the most dangerous targets. Note that this space is shared by the way point indicator, which can momentarily replace the targeting indicator when you switch way points. If this happens, you can restore the target indicator again by pressing the **Tab** key.

Operating the Coaxial Machine Gun

The coaxial machine gun is mounted on the same mount and can be traversed independently of the main gun. The commander can issue an additional weapons order to fire the main gun rounds for more appropriate use.

The coaxial machine gun is most effective against enemy carriers and against unfortified structures. It is also effective against machine gun nests and other light armor.

Use the coaxial machine gun using the same technique as the main gun. The only difference is that the coaxial machine gun has a **Coaxial** key next to the section denoting main gun. The machine gun fires in short, controlled bursts.

You may also order the gunner to track a target with the coaxial machine gun while the lower section of the status bar shows the main gun. The up arrow key will track the coaxial machine gun while the lower section of the status bar shows the main gun. The up arrow key will track the coaxial machine gun while the lower section of the status bar shows the main gun.

You may also order the gunner to track a target with the coaxial machine gun while the lower section of the status bar shows the main gun. The up arrow key will track the coaxial machine gun while the lower section of the status bar shows the main gun.

Managing Platoon Orders

As platoon leader your responsibilities increase. You must manage more additional tanks whose efforts you have to coordinate. The **COMMANDER** makes this simpler than you might think.

Your platoon members are more than just extensions of you. They can help you spot the enemy more effectively. As they gain experience and improve in performance, they can help you make sure that they stay alive too.

By default, your platoon members follow you. You can order them to independently engage enemy targets as well.



Clear the way.
The main gun
is the most
important
F-34 gun.

When the gunner reports that he is ready to fire, you should press the **Space Bar** or **Enter** key to fire the main gun. If the target is destroyed, the gunner centers the gun and issues new firing orders. If not, he continues tracking the target until it is destroyed or until you order otherwise. You can manually order the gunner to center the gun (return to the normal position for travel) by pressing the **Keypad 5** key.

You can also order the gunner from any position in the tank – provided you can see the target – to select them and assign them. If you override the gun traversal or elevation, the gunner relinquishes control of the main gun to you until ordered otherwise and any targeting order you issued before is canceled.

Operating the Coaxial Machine Gun

The coaxial machine gun comes with a machine gun mounted coaxially with the main gun – that is, on the same mount and can be traversed and elevated simultaneously. This gives the commander an additional weapons option that allows him to save valuable HE main gun rounds for more appropriate targets.

The coaxial machine gun is most effective against soft-skinned vehicles like trucks or armored carriers and against unfortified structures like houses and other buildings. It is also effective against machine gun nests and other light infantry fortifications.

You operate the coaxial machine gun using the same key commands and joystick movements as the main gun. The only difference is that you use the **Left Control** key to fire the coaxial machine gun. The machine gun fires continuously as long as you hold the **Left Control** key down. You may have to do this for a while for stubborn targets.

Just as there is a status bar next to the section denoting main gun ammunition, there is a machine gun status bar with two numbers next to it. The upper number is the number of rounds left for the coaxial machine gun while the lower number provides the same information for the hull-mounted bow machine gun. The machine gun can rapidly deplete its ammunition, so short, controlled bursts are recommended.

You may also order the gunner to track a target on which you want to use the coaxial machine gun. Use the same technique as described above for the main gun, just use the **Left Control** key to fire the machine gun.

Managing Platoon Orders

As a platoon leader your responsibilities increase to encompass operations involving one or more additional tanks whose efforts you have to coordinate. Don't panic – PANZER COMMANDER makes this simpler than you might think.

Your platoon members are more than just extra guns – they are also extra eyes and ears and can help you spot the enemy more quickly. Like the members of your tank crew, they gain experience and improve in performance over time. You therefore want to make sure that they stay alive too.

By default, your platoon members follow you around in column formation. To have them independently engage enemy targets as they are spotted press the **E** key.

enemy targets and blow them away. This is the tactical situation. You can also aim the gun and issue orders.

of aiming the main gun with the joystick. The longer he survives, it is your job to aim (AP or HE) and issue the orders. The target until ordered to fire. The target passes out of view, even when

et for your gunner. This is discussed in the **Tab** key and **Caps Lock** key. The **Tab** key selects the nearest target and the **S** key orders the gunner to track and shoot the selected

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which is a text description of the target. The status of the main gun. When it is green, the gun is ready for anything. When it is yellow, the gunner has the target. When it is red, the gunner has the target.

Changing the Platoon Formation

While the default column formation is ideal for moving your platoon through friendly territory, it may not be optimal tactically. For example, if you are attacked from the front, your tanks are poorly deployed to respond to the attack.

To change the formation, use the F key to cycle between the six different formations available to your platoon. The formation indicator in the status bar will show a graphical representation of the new formation. Keep pressing the F key until the formation you want is selected. The key to selecting the right formation will indicate the location of the enemy in relation to your path. What follows are the formations supported by PANZER COMMANDER and their tactical uses:



Column. As stated earlier, this is the best formation for moving your platoon quickly down a road. It is particularly disadvantageous if you are attacked from the front or the rear as half or more of your platoon will be unable to target the enemy.



Echelon Left. In this formation your other platoon members line up diagonal to the rear and left of your tank. This is a good formation if you're expecting an attack from the left flank but need to advance on a position ahead.



Echelon Right. This is basically the opposite of the Echelon Left formation and is useful if you're expecting an attack from the right flank.



Line Abreast. This formation is useful if you're advancing on an enemy position. However, if the enemy attacks from the left or right flank, you may find that the majority of your tanks are unable to return fire.



Wedge. This formation is a compromise for those situations where you're unsure of which flank an attack may come from. Your tank is at the point of the wedge while the others follow along two diagonals behind you to the left and right.



Crescent. This is the opposite of the wedge formation and may be useful for outflanking a concentrated formation of enemy units.

Assigning Specific Targets

By default your platoon members engage enemy targets of opportunity. This may not always be a tactically good situation. You may wish to concentrate one or more of your platoon members to specific high-priority targets. To do this, use the target selection keys to identify the target you want to assign; for details see the section titled *Operating the Main Gun* starting on page 45. Then, while holding down one of the **Shift** keys, press either the **number** keys 1 or 2 (not from the numeric keypad) to assign a platoon member to the selected target. That tank's commander attacks the target until it's destroyed or until issued different orders. If the target is destroyed, the tank commander assigned to the target returns to engaging targets of opportunity.



Engaging the Enemy and Holding Fire

Throughout most of the time you want your platoon to engage the enemy. Occasionally you may wish to snipe or hold fire. Pressing H orders all of your platoon members to hold fire. Your tank commanders may not return fire. You can cancel the hold fire order by pressing the Engage key. All units in your platoon will then resume engaging the enemy. Pressing the Engage order cancels any specific target assignments.

Victory Conditions

Each mission scenario in PANZER COMMANDER has specific objectives which you must complete in order to win. Sometimes surviving the mission is all that's required. Sometimes a number of enemy targets or destroyed vehicles must be destroyed.

Victory points are accumulated whenever you destroy an enemy unit. For example, if you're ordered to destroy all of the enemy units of that type destroyed, the number of victory points you have accumulated is even. If you have achieved a major victory, a minor victory, or a tactical victory, you may be asked to achieve in pursuit of victory.

Destroy a Specific Unit

In this case you are asked to seek out a specific enemy unit and destroy it. Victory points for each vehicle or structure destroyed. If the objective units are well-defended, requiring a high level of risk your platoon in an assault on the objective.

deal for moving your platoon down a road optimally. For example, if you are only deployed to respond to enemy fire.

cycle between the six different types of information indicator in the status bar change formation. Keep pressing the F key until selecting the right formation is to your path. What follows is a list of their tactical uses:

the best formation for moving your platoon is particularly disadvantageous if you are attacking or more of your platoon won't be able to

other platoon members line up in a diagonal. This is a good formation if you're expected to need to advance on a position ahead.

the opposite of the Echelon Left formation is an attack from the right flank.

ful if you're advancing on an enemy position from the left or right flank, you may find it unable to return fire.

compromise for those situations when an attack may come from. Your tank is at the rear follow along two diagonals behind and

the wedge formation and may be useful for attacking enemy units.

my targets of opportunity. This may not wish to concentrate one or more of your targets. To do this, use the target selection sign; for details see the section titled. Then, while holding down one of the or 2 (not from the numeric keypad) to get. That tank's commander attacks the unit orders. If the target is destroyed, the is to engaging targets of opportunity.



The thanks of the people: Soviet tankers receiving decorations, 1943.

Engaging the Enemy and Holding Fire

Although most of the time you want your platoon members to engage any targets of opportunity, occasionally you may wish to sneak up on a target to gain the advantage of surprise. Pressing **H** orders all of your platoon members to hold fire. However, if fired upon your tank commanders may not maintain fire discipline and may proceed to return fire. You can cancel the hold fire order using the **E** key to issue the Engage command. All units in your platoon will then engage targets of opportunity. Note that issuing the Engage order cancels any specific target assignments.

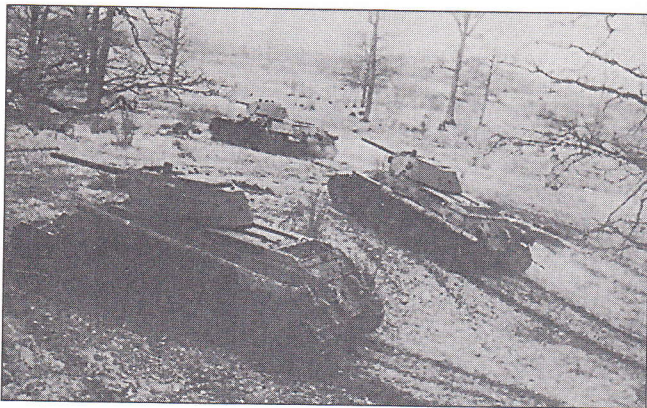
Victory Conditions

Every mission scenario in PANZER COMMANDER has a set of victory conditions. These are objectives which you must complete in order to achieve victory in the mission scenario. Sometimes surviving the mission is all that's required, while other times you may have to destroy a number of enemy targets or defend a particular area.

Victory points are accumulated whenever you achieve part or all of an objective. For example, if you're ordered to destroy all of the units of a specific type, you are awarded points for each unit of that type destroyed. When the scenario ends, the number of victory points you have accumulated is evaluated to determine whether or not you have achieved a major victory, a minor victory or a loss. The following are objectives you may be asked to achieve in pursuit of victory in PANZER COMMANDER:

Destroy a Specific Unit

In this case you are asked to seek out a specific unit for destruction. You are awarded victory points for each vehicle or structure in the unit to be destroyed. Often your objective units are well-defended, requiring you to either destroy the defenders first or risk your platoon in an assault on the objective.



*Counterattacks
Soviet armor
on the
advance, 1942*

Destroy All Units of a Specific Type

These are usually classic "search and destroy" objectives wherein you seek out all units of a particular type – usually other tanks or perhaps a supply column. Victory points are awarded for each unit of that type which is destroyed.

Defend a Specific Unit

Here you are being ordered to keep a specific unit intact for the duration of the scenario. Victory points are awarded for each vehicle or structure in that unit which survives until the scenario ends.

Defend All Units of a Specific Type

This type of objective involves keeping as many units as possible of a particular type alive until the end of the mission. Victory points are awarded for each such unit that survives.

Reach a Specific Way Point

This may seem deceptively easy, but if it's listed as a victory objective, you can bet that the enemy is fighting you every step of the way. Here you are awarded victory points only if you reach the way point.

Protect an Area

This objective involves keeping the enemy out of a specific area. Points are awarded if there are no enemy units in it at the end of the time limit.

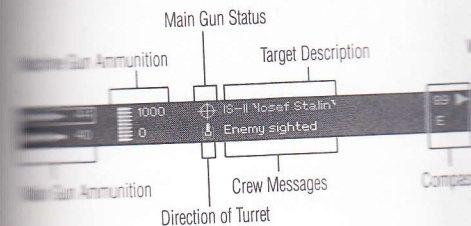
Survive

The lethal nature of tank battles is such that many times simply surviving to the end of a scenario is sufficient to achieve victory. The more members of your platoon who survive, the more victory points awarded.

Using the Status Bar

At the bottom of each simulation view screen is a status bar containing information about your tank, your platoon, and the mission. Learning to read the status bar is crucial to commanding your platoon.

The status bar is broken down into a number of sections discussed below.



Main Gun Ammunition Indicator

This shows the current load settings for the main gun. The images to the left indicate your main gun's current load: high-explosive rounds while the other represents armor-piercing rounds. The number of rounds of that type currently loaded is shown. The indicator turns yellow when ammunition gets low and green when it is full.

The type of round currently loaded in your main gun is indicated by the surrounding one or the other ammunition indicator. When there is a change of load, this rectangle turns yellow to indicate the gun is reloading. When it turns green again, the gun is ready to fire.

Machine Gun Ammunition Indicator

The machine gun belt icon indicates the ammunition count for the machine gun. The top number is the ammunition count for the machine gun. The bottom number is the ammunition count for the main gun.

Main Gun Status Indicator

The cross hairs icon next to the machine gun icon indicates the current status of your main gun in the hands of your gunner. If the cross hairs are green, the gun is ready to fire. If the cross hairs are red, the gun is in the process of laying the main gun onto the target and ready to fire.

Target Description

Next to the target cross hairs is a text description of the target. Pressing the **Tab** key to change the target selection. The section titled, *Commanding the Gunner* on the right side of the screen.



Countermeasures
Sometimes
on the
status bar

destroy" objectives wherein you seek out
tanks or perhaps a supply column. You
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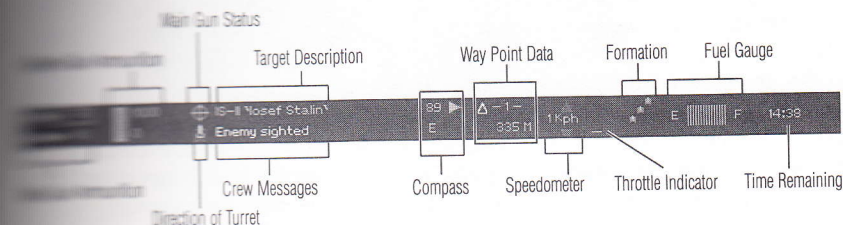
of a specific area. Points are awarded if
time limit.

any times simply surviving to the end
e more members of your platoon who

Status Bar

At the bottom of each simulation view screen there is a status bar which gives you information about your tank, your platoon and any targets you may have in the simulation. To read the status bar is crucial to successfully operating your tank and commanding your platoon.

The status bar is broken down into a number of separate regions, each of which are described below.



Machine Gun Ammunition Indicator

This shows the current load settings for the main gun and the machine gun. The two shell images to the left indicate your main gun load. The white-tipped shell represents high-explosive rounds while the other represents armor-piercing rounds. To the right of each shell is the number of rounds of that type left in your ammo store. This number turns yellow when ammunition gets low and turns red when ammunition is out.

The type of round currently loaded in your main gun is indicated by a rectangle surrounding one or the other ammunition indicator. When a round is fired or you order a change of load, this rectangle turns yellow to indicate that your loader is currently reloading the gun. When it turns green again, you can fire the main gun.

Machine Gun Ammunition Indicator

The machine gun belt icon indicates the ammunition status for your tank's machine guns. The top number is the ammunition count for the coaxial machine gun while the bottom number is the ammunition count for the bow machine gun.

Main Gun Status Indicator

The cross hairs icon next to the machine gun ammo indicator changes color to indicate the current status of your main gun in relation to the target currently assigned to your gunner. If the cross hairs are green, no target is selected, if yellow, the gunner is in the process of laying the main gun onto the target and if red, the gun is on target and ready to fire.

Target Description

Next to the target cross hairs is a text description of the currently selected target. Use the **Tab** key to change the target selection. This procedure is described in detail in the section titled, *Commanding the Gunner* on page 51.

Crew Message Indicator

From time to time your crew or one of the other members of your platoon inform you of events related to the operation of your tank or the command of your platoon. For example, the loader informs you when the gun is ready to fire and your driver informs you when you have reached a navigation way point. While these messages are presented as spoken audio, they also appear here as text.

Compass

The compass indicates the heading in which your tank is facing. The upper part of the compass shows the heading in degrees (0 to 359) while the lower part shows an abbreviation of the nearest cardinal direction (N, NE, E, SE, S, SW, W, NW.) Two arrows bracket the degree heading of the compass. These provide a relative direction to the next selected way point. To reach the way point, steer your tank until the arrows indicate that you are on course. When this happens, both arrows appear inverted. For example, if the course to the way point were 48 degrees, your compass would look something like this: > 48 <. Some missions don't have way points; in this case no arrows appear.

Way Point Data

The triangle symbol indicates the location of the way point data indicator. This is split into two parts, the upper part of which indicates the number of the currently selected way point and the lower number of which indicates the distance in meters to that way point. If the mission has no way points this area is blank.

Throttle Indicator

The throttle indicator shows you the current throttle setting for your tank. The indicator is essentially a bar graph which increases from the bottom up if you are driving the tank forward and increases from the top down if you are driving the tank in reverse. Normally the bar graph is displayed in green. However, if part of the graph is yellow or red then you are pushing your engine beyond its normal capabilities. If you run your engine like this for too long, you risk an engine failure.

Speedometer

The speedometer is just to the left of the throttle indicator and shows your tank's speed in kilometers per hour. In addition, above and below the speedometer are arrows which show you the current direction of movement, either forward or reverse.

Formation Indicator

This area shows a graphical representation of the current tank formation used by your platoon. It also shows you the current status of your tanks. If one of the indicators is yellow then the corresponding tank is disabled, but repairable. If red, then that tank is destroyed.

Fuel Gauge

This is a bar graph that shows your current fuel status.

Elapsed Time Display

A chronometer is provided which shows you the time remaining to complete your mission, in minutes and seconds.



TANK TACTICS

World War II and the decade prior to the war saw the development of tanks but the tactics used to employ them. Tanks were instrumental in the blitzkrieg tactics of the early 20th century. The concentration of firepower were the keys to victory. It was feared that both Allied and Axis forces developed countermeasures to counter them, including: rocket launchers, anti-aircraft guns, and other weapons.

Unsurprisingly, the keys to successfully operating a tank are the inherent strengths of the tank and to a lesser extent, the following sections some of the key tactical issues.

Mobility

The tank's greatest strength is its combination of armor and firepower, a great deal of tactical flexibility, allowing the tank to operate in changing battlefield conditions.

Motion is one of the keys to victory. While it is often said that a tank is a posture, often you may find that it's better to move than to stand still. Which to attack, even if you have to withdraw and concentrate your forces against the enemy. Avoid those areas where he is concentrated.

When you are forced to counter a strong enemy, it is a difficult target to hit and allows you to outflank the enemy's vulnerable side and rear armor. In many cases, this is especially true of many American and British tanks. You can allow you to employ hit and fade tactics against a more powerful enemy.



*Hitching a ride:
Soviet infantry
hop on to a
T-34 to cross a
river, 1944.*

TANK TACTICS

World War II and the decade prior to the war saw the rapid development not just of tanks but the tactics used to employ them. 'Panzers', as the Germans call them, were instrumental in the blitzkrieg tactics of the early war, where rapid mobility and concentration of firepower were the keys to victory. Tanks were so successful and so feared that both Allied and Axis forces developed numerous weapons systems to counter them, including: rocket launchers, anti-tank guns and tank destroyers.

Unsurprisingly, the keys to successfully operating a tank platoon are to take advantage of the inherent strengths of the tank and to avoid its inherent weaknesses. In the following sections some of the key tactical issues are discussed.

Mobility

The tank's greatest strength is its combination of mobility and firepower. This provides a great deal of tactical flexibility, allowing the tank to quickly and decisively respond to changing battlefield conditions.

Motion is one of the keys to victory. While it is sometimes useful to assume a defensive posture, often you may find that it's better to seek a more advantageous position from which to attack, even if you have to withdraw for a time. Mobility allows you to seek out and concentrate your forces against the enemy's weakest positions and, conversely, avoid those areas where he is concentrated in strength.

When you *are* forced to counter a strong enemy, your mobility makes you a more difficult target to hit and allows you to outflank him, giving you access to his more vulnerable side and rear armor. In many cases your armor is insufficient protection – this is especially true of many American and British vehicles. However, superior mobility can allow you to employ hit and fade tactics that allow you to successfully defeat a more powerful enemy.



The German Panzer tank is a formidable force. It is a tank that can get through Allied lines.

Armor

The strongest armor on nearly every tank is the front armor. Often, front armor thickness exceeds side armor thickness by a factor of two and top armor thickness is much as a factor of ten!

Obviously it is best to keep your front armor towards the enemy as it more effectively deflects incoming fire. Furthermore, you want to avoid attacks on your flanks since in most cases an armor-piercing round to your side armor will penetrate, killing crew members and damaging or destroying your tank.

The best way to deal with a flank attack is to turn to present your front armor towards the attack. However, if this exposes a different flank to enemy fire, it may be necessary to withdraw in order to preserve your forces. The best way to withdraw, of course, is to back away, keeping your front armor towards the enemy and continuing to fire as you withdraw. Turning around and running while under fire is usually a bad idea.

Conversely, when attacking enemy armor, you should seek to attack his more vulnerable side or rear armor. Of course, he will attempt to face you with his front armor, so the element of surprise may be necessary.

First Shot Advantage

Getting the first shot in can mean the difference between victory and an unmarked grave. A lot of factors can affect the speed with which you can bring your weapons to bear on enemy targets. The ability of your gunner and the inherent speed of traversal and elevation of your turret and gun are big factors. However, these can be mitigated by having good positioning on the enemy units. For example, if the enemy is ahead of you and you have come up on his flank, your weapons are already much closer to the correct alignment. In fact, even if he has superior traversal and elevation speed, your gunner should still be able to get off a first shot pretty easily.

If it comes down to trading shots, your loader becomes much more important. A good loader cycles new rounds more quickly than a poor one and this can make all the difference in a fire fight.

...to get the first shot advantage is probably... skillful maneuvering, knowledge of the...
Capabilities and Limitations
...your main gun is your most powerful weapon. It... your machine guns on soft-skinned targets... it for more dangerous opponents.

...of your enemy's armor rating and weapon... options. If you know that your main gun... there are a few different things you can... for the flanking shot with the aim of pen... if he has a good firing position. He... might even be free to turn his best armor... you try to attack.

...possible to get closer using intervening t... decreases even weaker guns have a b... However, this can be an extremely dangero...

...superior numbers you may try to overv... speed and enough luck some of your... flanking shots that are likely to take him o... possibly leaving you in a better position...

...also try damaging the enemy tanks so th... to return fire. Firing high explosive rounds... to his treads may cause some damage to his... tank unable to move. This gives you the op... or using your greater mobility to gain a fl...

Using Use of Terrain

...other things being equal, the best way to prot... that what is known as a good "hull down" position... having the lower part of your tank hidden behind s... lower end of a gully. This positioning protects the... yet leaves you free to return fire. This is func... as an infantryman.

...Even a slight rise can provide a useful hull down... The best way to assume a hull down position is t... your field of fire. Drive until you can just see... rise you wish to use as cover and stop there. M... enough to give you the field of fire you want. T... enemy on the other side of the rise then your hu... can just as quickly turn into a trap.



*The Firemen:
German Armor
racing to cut off
yet another
Allied break-
through.*

is the front armor. Often, front armor thick-
ness is a factor of two and top armor thickness by an

or towards the enemy as it more effectively
want to avoid attacks on your flanks since in
your side armor will penetrate, killing crew
or tank.

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n a poor one and this can make all the

The best way to get the first shot advantage is probably to lay an ambush for your ene-
ies. This entails skillful maneuvering, knowledge of the terrain and good timing.

Weapons Capabilities and Limitations

While your main gun is your most powerful weapon, it is not always the most appro-
priate. Use your machine guns on soft-skinned targets to conserve main gun ammuni-
tion. You need it for more dangerous opponents.

Knowledge of your enemy's armor rating and weapons is indispensable when evalu-
ating tactical options. If you know that your main gun will probably not penetrate his
front armor, there are a few different things you can try:

- You can try for the flanking shot with the aim of penetrating his side armor. This may
not be practical if he has a good firing position. He might well be able to cover his
flanks and might even be free to turn his best armor towards you no matter the angle
from which you try to attack.
- It may be possible to get closer using intervening terrain or structures for cover. As
the distance decreases even weaker guns have a better chance of penetrating tough
armor. However, this can be an extremely dangerous tactic for obvious reasons.
- If you have superior numbers you may try to overwhelm the enemy with an assault.
With enough speed and enough luck some of your tanks can get through to deliver
close-in flanking shots that are likely to take him out. A green enemy unit might even
withdraw, possibly leaving you in a better position to press the attack.
- You can also try damaging the enemy tanks so that they are either immobilized or
unable to return fire. Firing high explosive rounds or armor piercing rounds in prox-
imity to his treads may cause some damage to his wheels, treads or suspension, leav-
ing his tank unable to move. This gives you the option of then bypassing these enemy
units or using your greater mobility to gain a flanking position.

Making Use of Terrain

All other things being equal, the best way to protect your tank from enemy fire is to
find what is known as a good "hull down" position. Being hull down essentially means
having the lower part of your tank hidden behind some terrain feature like a hill or the
lower end of a gully. This positioning protects the majority of your tank from enemy
fire yet leaves you free to return fire. This is functionally equivalent to digging a fox-
hole as an infantryman.

Even a slight rise can provide a useful hull down position if you make proper use of it.
The best way to assume a hull down position is to use the gunner's position to evalu-
ate your field of fire. Drive until you can just see from the gunner's position over the
rise you wish to use as cover and stop there. Make sure your gun can depress far
enough to give you the field of fire you want. This is important! If you can't hit the
enemy on the other side of the rise then your hull down position isn't very useful and
can just as quickly turn into a trap.

A depression can actually make for a better hull down position than a rise. This allows you to position your tank on the far side of the depression facing slightly downward, rather than on the far side of a rise facing upward. Why is this an advantage? Because your main gun usually elevates to a much greater degree than it depresses. On the back side of a rise, your tank is pointed slightly upward, forcing you to depress your gun further to hit targets on the other side of the rise. On the far side of a depression with your tank facing slightly downward, you must elevate your gun more to hit targets beyond the rim. Because your gun can elevate higher, you have a much better view through which you can fire.

Terrain features also allow you to hide your tanks completely from enemy sight, allowing you to lay in ambush, retreat without taking excessive losses and sneak up on an enemy position. By choosing your ground properly you can even force the enemy to divide his forces, leaving him more vulnerable to your weapons.

Dealing with Artillery and Air Strikes

The greatest danger to a tanker from an artillery strike is the possibility that an incoming round will land directly on top of the tank, severely damaging the relatively weak top armor. This is pretty unlikely (but still possible); it is more common that artillery shells landing in close proximity damages your wheels or tread, leaving your tank immobile. Still, it's not much fun to be caught in an artillery strike, so you probably want to avoid them if you can.

If you do find yourself in the middle of one, don't panic. Most bombardments won't last too long. One way to get out of a strike in progress is to observe the pattern of the shells as they land to get a feel for where they are likely to fall next. This gives you some idea of where to move your tanks to get away from it.

Of more serious threat to tankers are aircraft bearing anti-tank cannon. These planes are designed to attack the weak roof armor of tanks with their oversized (for aircraft) guns.

There's precious little you can do about this. You can try and take cover under trees or in deep gullies, but there are few places that a plane cannot reach. You can try running, but planes are much faster than your tanks, so the best you can probably manage is to dodge them until they run out of fuel or ammunition. You can try shooting them down with your machine guns or even your main gun, but this outcome is wildly unlikely.

Fortunately, aircraft have little endurance and are often called off to attack other targets, so you have a good chance of surviving an air strike if you stay cool. For more information on the capabilities and vulnerabilities of the aircraft and anti-tank guns you can encounter in PANZER COMMANDER, see the section *Descriptions of Enemy Ordnance* starting on page 108.



Attacking Fortifications

Other tanks are not the only threat you are asked to deal with. Enemy defenses manned by infantry who are often dug in can be a real problem. These may range from simple machine gun nests to complex emplacements of anti-tank guns dug into the ground. Occasionally you even come across a hidden Panzerfaust or bazooka. They all have one thing in common: your job to make sure that they fail.

When attacking dug-in infantry, your best weapon is your main gun with the high explosive rounds with which it is equipped. Artillery is also effective against infantry positions since the shells land in a very small area. Most tanks have high velocity guns, which are more effective than others. In general, the larger the gun, the more effective the tanks with larger guns have an inherent advantage. Some bunkers are hardened to be resistant to high explosive rounds. It may be more effective in this case to "track" these bunkers instead. Unless you're sure you're better off reserving your armor-piercing rounds for other targets.

Your machine guns can also be useful allies. In village fighting infantry often take cover in buildings. If you can bring them down by sufficient machine gun fire, or by r

For more information on the capabilities and vulnerabilities of the fortifications you can encounter in PANZER COMMANDER, see the section *Enemy Emplacements* starting on page 115.

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ns or even your main gun, but this out-

nd are often called off to attack other tar-
g an air strike if you stay cool. For more
ibilities of the aircraft and anti-tank guns
see the section *Descriptions of Enemy*



*Under fire:
German
infantry taking
cover, 1942.*

Attacking Fortifications

Other tanks are not the only threat you are asked to deal with. Often you are faced with
modern defenses manned by infantry who are equipped with anti-tank weapons.
This may range from simple machine gun nests to hardened concrete bunkers. You
often find emplacements of anti-tank guns dug into ridges or other commanding posi-
tions. Occasionally you even come across a hidden bunker, with infantrymen operat-
ing a Panzerfaust or bazooka. They all have one simple goal: your destruction. It is
your job to make sure that they fail.

When attacking dug-in infantry, your best weapon is your main gun and the high-
explosive rounds with which it is equipped. Armor piercing rounds are not generally
as effective against infantry positions since they're designed to concentrate their ener-
gy in a very small area. Most tanks have high-explosive shells, but some are more
effective than others. In general, the larger the shell the more powerful the explosion,
so the tanks with larger guns have an inherent advantage when attacking fortifica-
tions. Some bunkers are hardened to be resistant to attacks with high-explosive
rounds. It may be more effective in this case to use your armor-piercing rounds to
"crack" these bunkers instead. Unless you're dealing with a concrete bunker, howev-
er, you're better off reserving your armor-piercing rounds for enemy tanks.

Your machine guns can also be useful allies against weaker fortifications. In urban or
village fighting infantry often take cover in buildings, many of which can be brought
down by sufficient machine gun fire, or by running them over.

For more information on the capabilities and vulnerabilities of bunkers and other for-
tifications you can encounter in PANZER COMMANDER, see the section *Stationary Gun
Emplacements* starting on page 115.



Panzers in the Snow: A column of German armor advances the order to advance. The

■ USING THE SCENARIO EDITOR

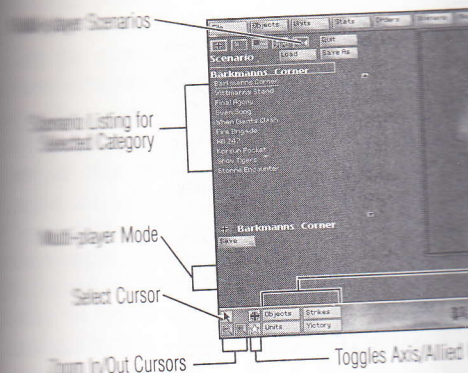
One of the most exciting features of Panzer Commander is the ability to create and customize scenarios to your own specifications. If you want to recreate battles from history, interesting "what if" scenarios, or just exciting fictional battles, open the PANZER COMMANDER program folder from your Windows 95 Start button and click on the Scenario Editor icon. When the Scenario Editor loads, there is a row of buttons across the top edge of the screen. These are, in order, File, Objects, Units, Stats, Orders and Scenario. These buttons select which control panel is currently visible on the left side of the screen, and are each covered in detail in the following pages.

Along the bottom edge of the screen is a control bar with another cluster of buttons. These buttons all allow you to manipulate the view while you are in the Scenario Editor. Starting from the left side, the first two buttons are Zoom Out and Zoom In. If you click on Zoom In and click anywhere on the map area, the view focuses on that area, magnifying it. If you click Zoom Out, the view pulls back to reveal more of the map. There are six levels of magnification that the map can be viewed at. Even when pulled back to the widest view, the map is too large to be seen in its entirety. To view the off-screen portions of the map, use the **arrow** keys to scroll the map.

The next six buttons control information the map shows. If the button is highlighted, then the map displays information of that type. The two small buttons to the right of the Zoom In and Zoom Out buttons are Show Axis Units and Show Allied Units. When these are highlighted, all units belonging to the corresponding side are visible. The other four buttons are as follows: Objects displays all objects that are not units; Units displays all tanks, trucks, AFV's, AT Guns, and infantry emplacements; Strikes displays all off-map artillery strikes and bombing missions; Victory displays all victory condition markers.

The last button on the bottom control bar clears the feature you are currently using and resets your pointer to the pair of brackets used to manipulate the position of objects on the map. To move an object on the map, click on it, drag it to the new desired location, and release the mouse button. If you click on an object on the map, a pair of brackets appears around the object, indicating that it is the current active object. A small red triangle appears adjacent to the active object that indicates which direction the object is facing. A $\emptyset$ symbol indicates that it is a wrecked or destroyed model. While using the editor, the **Left Control** key is used to activate additional options. If you hold down the **Left Control** key and click on an object on the map, it cycles through the different facings (clock-wise) and the destroyed object/unit settings.

Loading and Saving Scenarios



To load an existing scenario into the editor, click on the File control panel appears on the left. In the scenario editor, this is the control panel that appears. When the control panel appears, there is a row of five buttons. These buttons select the nationality of scenario you wish to load: American, British and Multiplayer. While Multiplayer is not a nationality, it allows which more than one human player can play.

If you click on Multiplayer, four more buttons appear. These buttons allow you to choose the different multiplayer modes. The first mode allows you to choose the winner determined by whichever player has the most units. The second mode allows you to divide the players into two teams, the winner being determined by the team with the most units. The third mode allows you to divide the players into two teams, the winner being determined by the team with the most units. The fourth mode allows you to divide the players into two teams, the winner being determined by the team with the most units.

If you click on a nation, click on the text box to enter the name of the scenario you wish to load, or click on the name of any scenario in the list. The scenario list can be scrolled up or down using the arrow keys. Once you have entered the scenario's name, click on the OK button. The name and nationality of the scenario appears in the scenario list.

After you have made any desired changes, you can save the scenario to the file name that currently appears in the Save button. To save the scenario to a different file name, click on the Save As button. When no name appears below the scenario name and click on the Save As button.

When you are finished in the scenario editor, you can return to the desktop by clicking on the Quit button.



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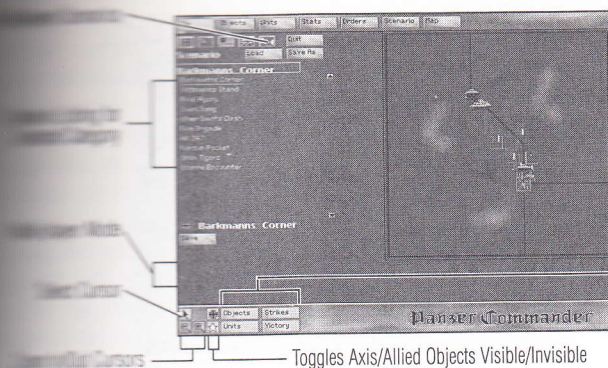
Parzen Commander is the ability to create scenarios. If you want to recreate battles, or just exciting fictional battles, you can use the Windows 95 Start button and the Scenario Editor loads, there is a row of buttons: Order, File, Objects, Units, Stats, Orders and the File panel is currently visible on the left side of the screen in the following pages.

A control bar with another cluster of buttons to manipulate the view while you are in the Scenario Editor. The first two buttons are Zoom Out and Zoom In. When you click on the Zoom In button, the view focuses on the area you are currently viewing. When you click on the Zoom Out button, the view pulls back to reveal more of the map. The Zoom In button can be viewed at. Even when pulled back, the map can be seen in its entirety. To view the off-screen area, you can scroll the map.

The map shows. If the button is highlighted, it is the current active type. The two small buttons to the right of the map are Show Units and Show Allied Units. When these buttons are clicked, the corresponding side are visible. The other two buttons are Show Objects and Show Allied Objects. Objects that are not units; Units displays all units; Objects displays all emplacements; Strikes displays all off-map strikes; and Victory displays all victory condition markers.

When you click on a nation, click on the text box and type the name of the scenario you want to load, or click on the name of any scenario on the list below the text box. The scenario list can be scrolled up or down using the Windows-style scroll bar. After you have entered the scenario's name, click on the Load button. After the scenario loads, the name and nationality of the scenario appears near the bottom of the panel, just below the scenario list.

Loading and Saving Scenarios



Toggle Visible/
Invisible on Map

Toggles Axis/Allied Objects Visible/Invisible

To load an existing scenario into the editor, click on the File button at the top of the screen. The File control panel appears on the left side of the screen. Whenever you enter the Scenario Editor, this is the control panel that is first visible by default. When the File control panel appears, there is a row of five buttons across the top of the panel. These buttons select the nationality of scenario you wish to edit, and are, in order: German, Soviet, British and Multiplayer. While Multiplayer is not a nationality, it is the only type of scenario which more than one human player can play in simultaneously.

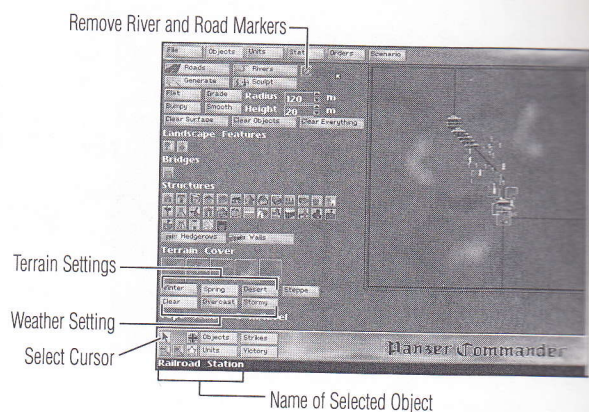
When you click on Multiplayer, four more buttons appear near the bottom of the panel that allow you to choose the different multiplayer modes. Melee mode is a free for all with the winner determined by whichever player has the most kills when the time is up. Team mode allows you to divide the players into two teams, Axis and Allies, again with the winner being determined by the team with the highest total kills. Platoon mode is a free for all to the death between two players, each controlling an entire platoon. Flag selects the Flag mode. In this mode, the players are divided into Axis and Allies again, but kills do not determine the winner. The winner is the first team to have a tank reach the enemy headquarters. In all multiplayer modes except Platoon mode, the scenario is limited to six players. In Platoon mode, you may only have two players.

When you click on a nation, click on the text box and type the name of the scenario you want to load, or click on the name of any scenario on the list below the text box. The scenario list can be scrolled up or down using the Windows-style scroll bar. After you have entered the scenario's name, click on the Load button. After the scenario loads, the name and nationality of the scenario appears near the bottom of the panel, just below the scenario list.

After you have made any desired changes, you can save the scenario. To save the scenario to the file name that currently appears below the scenario list, simply click on the Save button. To save the scenario to a different file name or to save the scenario when no name appears below the scenario list, click on the text box, enter the new scenario name and click on the Save As button.

When you are finished in the scenario editor, you may exit the editor and return to the desktop by clicking on the Quit button.

Creating the Terrain



To create or modify terrain in a scenario, click on the Objects button at the top of the screen to bring up the Objects panel on the left side of the screen. If you want to create new terrain across the entire map, click on the Generate button. This clears all previous elevation information and replaces it with random terrain. The severity of the terrain is determined by the number entered in the Height value of the Objects panel.

To create more specific or localized terrain, click on the Sculpt button. Panzer Commander features a "push/pull" style of terrain building, where if you pull up a point of terrain, the terrain around that point is also pulled up to a lesser degree. The amount of area this feature affects is controlled by the Radius value on the Objects panel. The amount of height you add or subtract with each mouse click is determined by the Height value.

Hint: For natural hills and depressions, it is best to keep the height value between the number from -10 to +20 meters and the radius to less than 400 meters.

To create rough terrain over the entire map, click on the Bumpy button. Again, the severity of the terrain is determined by the Height value. Unlike the Generate button, the Bumpy button does not clear the previous terrain, but instead applies a bumpiness to the existing terrain. When you have finished roughing up the map, you can also get rid of the more angular and choppy terrain by clicking on the Smooth button. This makes the elevation changes on your map more gradual and more natural. The Smooth button may be used multiple times to get the desired effect.

Hint: When using the Bumpy button, it is best to keep the height value to a number from +5 to +15 meters, otherwise the terrain is so rough that tanks may have trouble traversing it.

Rivers and Roads

Rivers and roads are made up of a string of connecting segments. To create a river or road, click on the River or Road button, and then click anywhere on the map to begin a new segment. The current segment is active, so you can continue in this way by clicking on the map to add another segment and have the road turn in the direction of the current set of road markers. You can also click on any other feature. Your road markers are currently visible in the simulator. If you want to remove the road markers, you can now click on the 0 button. This removes the road markers wherever you have placed road markers, smoothing it out in the process. Use this button during the creation of rivers. The Grade button is used to grade the edges so that edges do not hang out into the air. To remove the road markers, click on the "0" button. This removes the road markers, but leaves the actual texture and grade of the road so far.

When you grade rivers or roads, they indicate the direction of the river. Every time you grade, this indicates the direction of the river. To grade sparingly, place road markers, and again after you have placed a road marker, avoid ninety degree turns when placing road markers to look less natural.

Weather and Terrain Covers

In Panzer Commander, the terrain can be set to represent different weather conditions, the Steppe of Russia, or the Winter or Spring weather. To change it, click one of the terrain type buttons on the Objects panel. To further reinforce the feel of the terrain, the terrain type buttons are the weather settings. To add fog effects, Overcast for a light cloud layer with some fog effects, or Heavy for a heavy fog effects.

Above the weather and terrain type buttons are five textures that can be used to modify the movement of all vehicles. The exact effect depends on the current terrain type, but are identical. The first button represents a slick or muddy texture that makes movement easier. The next button represents a lightly bumpy texture that is the default for the map. The last button represents a very bumpy and slow all movement across them.

Sometimes it is useful to clear certain aspects of the map. To remove all surface textures, click on the Clear Surface button. To remove all road markers, click on the Clear Roads button. To remove all hedgerows, and river and road markers. To return to the default elevation that the map has, click on the Flat button. The elevation that the map has is determined by the Height value. To return to the default elevation that the map has, set the Height value to 25 meters.



Selected Object

to, click on the Objects button at the bottom of the left side of the screen. If you want to generate terrain, click on the Generate button. This clears the map with random terrain. The severity of the terrain is controlled by the Height value of the Objects panel. To create a terrain building, where if you pull up a point is also pulled up to a lesser degree, click on the Sculpt button. The height is controlled by the Radius value on the Objects panel. Subtract with each mouse click is determined by the Radius value.

it is best to keep the height value and radius to less than 400 meters.

map, click on the Bumpy button. Again, the Height value. Unlike the Generate button, the Bumpy button roughs up the map, you can also generate a smooth effect by clicking on the Smooth button. This makes the terrain more natural. The Smooth button has a radius and a height value.

best to keep the height value to a number that is so rough that tanks may have trouble

Roads and Rivers

Roads and rivers are made up of a string of connecting segments. To create roads, click on the Roads button, and then click anywhere on the map to begin a road segment. To create a new segment and begin a new one, click on the map again. The road segment is active, so you can continue in this way, clicking on the map every time you want to add a segment and have the road turn in a different direction. When you are finished with the current set of road markers, either click on the road button again to start on any other feature. Your road markers now appear as a thin black line on the map. If you are happy with the placement of the road markers, you can now click on the Grade button. This makes the road appear wherever you have placed road markers, and also indents the road into the terrain, smoothing it out in the process. Use this process after clicking the River button for the creation of rivers. The Grade button also levels the ground beneath the river so that edges do not hang out into the air. If you wish to remove the river markers, click on the "0" button. This removes all markers so that they are not visible, but leaves the actual texture and graphics of all rivers and roads you have placed so far.

When you grade rivers or roads, they indent themselves into the terrain, especially rivers. Every time you grade, this indentation increases. Unless you want deep canals, it is best to grade sparingly, perhaps once after you have placed river and road markers, and again after you have finished placing all buildings. Try to avoid ninety degree turns when placing river or road markers as these make the terrain look less natural.

Setting Weather and Terrain Covers

IN *HALO: THE SCENARIO EDITOR*, the terrain can be set to represent the Desert of the North African Campaign, the Steppe of Russia, or the Winter or Spring of Europe. The default terrain set is Spring, but to change it, click one of the terrain buttons near the bottom of the Objects panel. To further reinforce the feel of the setting you have chosen, directly below the terrain type buttons are the weather settings. Click on Clear for a clear day with no fog effects, Overcast for a light cloud layer with some haze in the air, or Stormy for dense cloud cover with heavy fog effects.

Directly above the weather and terrain type buttons are the terrain covers. These are a set of five textures that can be used to modify the basic texture of the terrain and affect the movement of all vehicles. The exact names of each terrain cover vary depending on the current terrain type, but are identical in their effect in the game. The first button represents a slick or muddy texture that makes it difficult for tanks to find traction. The next button represents a lightly bumpy texture. The middle button is the smooth texture that is the default for the map. The next two textures are increasingly bumpy and slow all movement across them.

Sometimes it is useful to clear certain aspects of a map currently under construction. To remove all surface textures, click on the Clear Surface button. To remove all objects on the map, click on the Clear Objects button. Note that clear objects also removes all walls, hedgerows, and river and road markers. To return the map to a single, even elevation, click on the Flat button. The elevation that the map is leveled to is set by the Height value. To return to the default elevation that the map is set to when the Scenario Editor first appears, set the Height value to 25 meters.

Learning Units

Diagram illustrating the game interface components and their corresponding labels:

- Soviet
- America
- Britain
- France
- Poland
- German
- Tanks
- Other Vehicles
- Armored Emplacements
- Unit Name
- Select Cursor
- Name of Selected Unit Type
- Platoon Unit
- Objects
- Drone
- Units
- Victory
- Toggle Axis & Allied Units Visible/Invisible
- Toggle Units Visible/Invisible

[illegible]

The vehicles available to each nation are as follows:

German:	Skoda, Pz-IIIIF, Pz-III G, Pz-IIIH, Pz-IVG, Tiger, Panther D, Pz-IVF, Opel Blitz, Sdkfz 251/1, Sdkfz Stug-III G, Sdkfz-234/1
Soviet:	BT-5, BT-7, IS-2, KV-1/41, T-34/85, T-34/85, BA-6, GMC, SU-85
American:	M4A3, M4A3/76, M4A3E2, M4A3E8, M4A3E9, M4A3E10, M4A3E12, M4A3E13, M4A3E14, M4A3E15, M4A3E16, M4A3E17, M4A3E18, M4A3E19, M4A3E20, M4A3E21, M4A3E22, M4A3E23, M4A3E24, M4A3E25, M4A3E26, M4A3E27, M4A3E28, M4A3E29, M4A3E30, M4A3E31, M4A3E32, M4A3E33, M4A3E34, M4A3E35, M4A3E36, M4A3E37, M4A3E38, M4A3E39, M4A3E40, M4A3E41, M4A3E42, M4A3E43, M4A3E44, M4A3E45, M4A3E46, M4A3E47, M4A3E48, M4A3E49, M4A3E50, M4A3E51, M4A3E52, M4A3E53, M4A3E54, M4A3E55, M4A3E56, M4A3E57, M4A3E58, M4A3E59, M4A3E60, M4A3E61, M4A3E62, M4A3E63, M4A3E64, M4A3E65, M4A3E66, M4A3E67, M4A3E68, M4A3E69, M4A3E70, M4A3E71, M4A3E72, M4A3E73, M4A3E74, M4A3E75, M4A3E76, M4A3E77, M4A3E78, M4A3E79, M4A3E80, M4A3E81, M4A3E82, M4A3E83, M4A3E84, M4A3E85, M4A3E86, M4A3E87, M4A3E88, M4A3E89, M4A3E90, M4A3E91, M4A3E92, M4A3E93, M4A3E94, M4A3E95, M4A3E96, M4A3E97, M4A3E98, M4A3E99, M4A3E100
British:	Matilda II, Crusader I, Valentine, Cromwell III, Cromwell IV, Crocodile, Daimler, Sexton, Achilles, Sherman
French:	R-35, Hotchkiss, Truck
Polish:	R-35, Truck

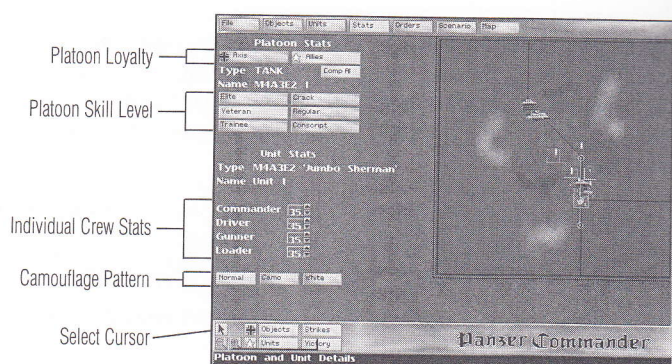
Polish: *R-35, Truck*

For detailed information about any of the tanks, see the appropriate entries in the *Tank Statistics and Capabilities* starting on page 73. For information about the other units, see *Descriptions of Enemy Ordnance* starting on page 100.

To place a unit, first click on a nationality, then on the desired unit, and then on the map to place a platoon of that type of vehicle. You can change the facing of the vehicle while it is selected; press the **Left Control** key and click again. The red arrow on the map indicates the "front" of the vehicle and a $\emptyset$ symbol means the vehicle is wrecked. To change the number of vehicles that appear in the platoon, change the number that appears in the Units panel. To change the platoon's name or an individual vehicle's name, select that unit on the map. To change the platoon name, you can click on any unit in the platoon, then click on the Platoon Name text box to edit the name. To change an individual unit's name, click on that unit, then click on the Unit Name text box to edit that name.

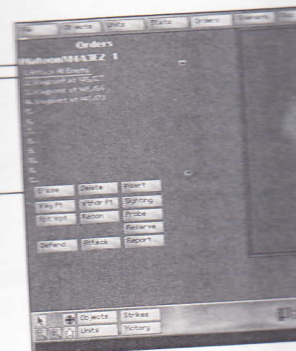
You can also change the vehicle types of individual units inside each platoon. To do this, click on the unit on the map you wish to change, click on the vehicle type button to replace it with, and click on the Change button at the bottom of the Units panel. Remember that only tanks can be swapped into tank platoons, and only non-tanks can be swapped into non-tank platoons.

Changing Unit Stats



Once you have placed a unit on the map, you can change its stats by clicking on the Stats button at the top of the screen to make the Stats panel appear on the left side of the screen. The Axis button and the Allies button at the top of the screen allow you to select which side of the conflict each platoon fights on. This way, you can simulate captured equipment being used by the other side.

Just below these two buttons is the Comp AI button. If this is highlighted, then the unit is computer controlled. Units are set to AI control by default. To create a valid scenario, you have to set one tank platoon to human control by clicking the Comp AI button so that it is no longer highlighted. A scenario with more than one human controlled platoon is only valid if it is saved as a multiplayer scenario. This control only matters for tanks, since non-tanks are always AI controlled, no matter what this button is set to.



If you wish units to do anything other than sit and wait, you have to supply them with orders. The top half of the Orders panel is a list of the orders it is currently performing. To change the default orders of Attack All Enemy. To change the order at the top of the panel. To erase the order, click on the Erase button. To remove the order completely, click on the Remove button. To add a new command before the current command, click on the Add button. To add a new command, simply select a new command.

- Way Pt** Places way points on the map for the unit.
- Withdraw Pt** Places a withdrawal point on the map if broken.
- Repeat Way Pt** Repeats a way point so that the unit returns to it.
- Recon** Orders unit to reconnoiter the area.
- Reserve** Orders unit to reserve mode until a timer elapses. You are prompted to give the unit a new order either until a unit type appears or a timer elapses.
- Defend** Orders unit to defend. You are prompted to give the unit a new order to defend.
- Attack** Orders unit to attack. You are prompted to give the unit a new order to target.
- Rush** Like Attack, but the unit does not stop at its last way point. Many tanks may be used.

the tanks, see the appropriate section. The levels of skill are, from least skilled to most skilled: Conscript, Trainee, and Elite. You can further adjust individual members of the crew in the Stats panel.

Then on the desired unit, click on the Camouflage button. This allows you to change the camouflage pattern the tank appears with in the scenario. The levels of skill are, from least skilled to most skilled: Conscript, Trainee, and Elite. You can further adjust individual members of the crew in the Stats panel.

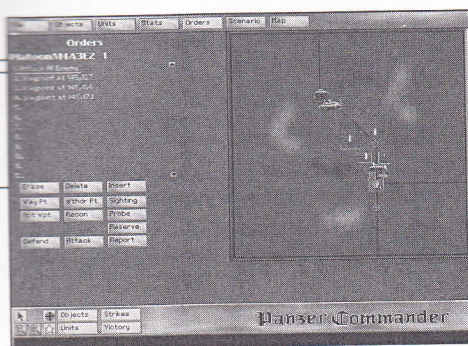
Then on the desired unit, click on the Camouflage button. This allows you to change the camouflage pattern the tank appears with in the scenario. The levels of skill are, from least skilled to most skilled: Conscript, Trainee, and Elite. You can further adjust individual members of the crew in the Stats panel.

Assigning Platoon Orders and Way Points

name.

individual units inside each platoon. To change, click on the vehicle type button at the bottom of the Stats panel.

into tank platoons, and only non-



can change its stats by clicking on the Stats panel appear on the left side of the screen. The top of the screen allows you to simulate combat on. This way, you can simulate combat.

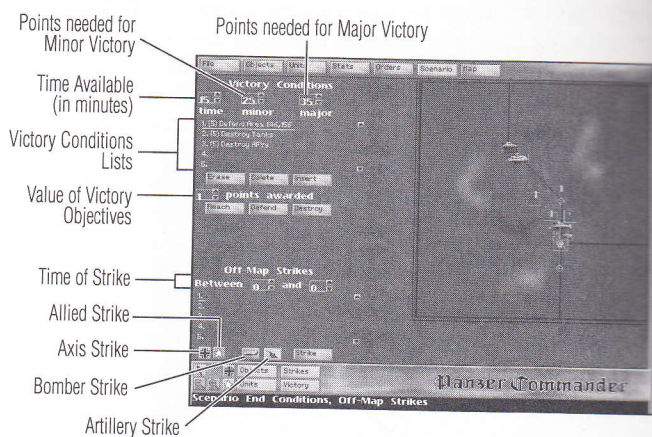
on. If this is highlighted, then the unit is in combat by default. To create a valid scenario, click by clicking the Comp AI button so that there is more than one human controlled platoon. This control only matters for tanks. What this button is set to.

With units to do anything other than sit where they are and shoot at enemies as they pass by, you have to supply them with orders by clicking on the Orders button at the top of the screen. The top half of the Orders panel shows the platoon's name followed by a list of the orders it is currently programmed with. All platoons start out with the default orders of Attack All Enemy. To change an order, click on any order on the list at the top of the panel. To erase the order but to leave the slot blank, click on the Delete button. To remove the order completely, click on the Delete button. To insert a command before the current command, click on the Insert button. To simply change the current command, simply select a new command from below.

Way Pt	Places way points on the map for the unit to follow.
Withdraw Pt	Places a withdrawal point on the map. This is where the unit retreats to if broken.
Way Pt	Repeats a way point so that the unit patrols the area.
Recon	Orders unit to reconnoiter the area.
Reserve	Orders unit to reserve mode until a certain event or amount of time has elapsed. You are prompted to give the conditions that the unit waits for, either until a unit type appears or a number of minutes elapse.
Defend	Orders unit to defend. You are prompted to select what you want the unit to defend.
Attack	Orders unit to attack. You are prompted to select what you want the unit to target.
Rush	Like Attack, but the unit does not stop to engage <i>any</i> enemy units until it reaches its last way point. Many tanks may not survive this order.

Hint: Even though you are controlling the human controlled tank in the simulation, it's still a good idea to give the human controlled tank way point orders, and use these way points to navigate by once you are in the simulation.

Setting up Air and Artillery Strikes



To add off-board fire support, click on the Scenario button at the top of the screen. That the Scenario panel appears on the left side of the screen. Near the bottom of the panel is an area labeled Off-Map Strikes. To add a fire support mission, first select which side you wish to have conduct the support mission by clicking on either the Allied button or the Allies button in the bottom-left corner of the Scenario panel. Then select either a bomber run or an artillery strike by clicking on the Bomber or Artillery button at the bottom of the Scenario panel. Next set the time you wish the strike to occur by adjusting the times listed just below the Off-Map Strikes header. Now, just click on the Strike button and click on the map where you want the strike to occur.

Victory Conditions

The last thing to do is set the victory conditions for the scenario. In each scenario, you only have a limited time to complete your objectives. This can be modified by changing the Time available in minutes at the top of the Scenario panel. Each scenario also has two victory levels, Minor (partial objectives met) and Major (objectives met). These point levels can also be changed at the top of the Scenario panel. When you have scored enough points to achieve a major victory, the scenario immediately ends; unless one of the victory conditions is "Defend Area", in which case the scenario ends when time runs out or all enemy vehicles have been destroyed. To set a victory condition, first set the number of points the objective is worth. Then, click on one of the three victory objective buttons:

For Reach objectives, click anywhere on the map. If one of your units reaches the marked area, you receive the listed number of points. You can change the size of the reach objective area by pressing the arrow-pointer icon at the bottom of the screen, holding down the **Left Control** key, clicking on a reach objective marker, and dragging the mouse to set the size of the objective area.



...you have two options. For Defend Map, you... to defend. If this object survives, you g... you click on an area of the map in the... gain the listed number of points if there a... out of the scenario.

...objectives, when you click on the but... on the Map button and then clicking... by clicking on the All button, or a category... In all these cases, you receive the... is destroyed.

Scenario Creation Tips

The default height when the Scenario Editor... lowest elevation is 0 meters and the highest is... the listed amount from the current height of the... the upper elevations start to "plateau" once... 100m, and the reverse occurs once the terrain b... lower the elevation.

Try to place objects in small, tight groups. Look... are playing, but don't over-populate an area e... This is easier to do if you place objects while r...

Forest sections look best when they are used a... than the primary object of attention. Also, th... keep in mind how this affects movement in yo...

ing the human controlled unit in the scenario.
controlled tank way point orders, or even
by once you are in the simulation.

rikes

Major Victory



the Scenario button at the top of the screen on
left side of the screen. Near the bottom of the
add a fire support mission, first select what
rt mission by clicking on either the Artillery
er of the Scenario panel. Then select either
ing on the Bomber or Artillery button at the bot
me you wish the strike to occur by adjusting
es header. Now, just click on the Strike button
strike to occur.

ons for the scenario. In each scenario, you
objectives. This can be modified by chang
p of the Scenario panel. Each scenario also
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op of the Scenario panel. When you have
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ea", in which case the scenario ends when
been destroyed. To set a victory condition,
s worth. Then, click on one of the three vic-

e map. If one of your units reaches the
of points. You can change the size of the
pointer icon at the bottom of the screen.
on a reach objective marker, and dragging
a.



*Barbarossa:
German armor
and infantry
advance into
the Ukraine,
1941.*

When you have two options. For Defend Map, you are prompted to select any object
to defend. If this object survives, you gain the listed number of points. For
Reach, you click on an area of the map in the same fashion as a reach objective,
you gain the listed number of points if there are no enemy units in the defend area
end of the scenario.

For enemy objectives, when you click on the button, you can select a specific object
by clicking on the Map button and then clicking on an object on the map, all enemy
units by clicking on the All button, or a category of objects by clicking on the appropri-
ate button. In all these cases, you receive the listed points every time one of those
objects is destroyed.

Scenario Creation Tips

The default height when the Scenario Editor first loads is 25 meters. The
lowest elevation is 0 meters and the highest is 100 meters. Sculpt adds or subtracts
the listed amount from the current height of the map. If you keep adding to the height,
the upper elevations start to "plateau" once the height of terrain starts hitting
100m, and the reverse occurs once the terrain hits 0 meters, if you continue to try and
lower the elevation.

Try to place objects in small, tight groups. Lone objects normally look silly once you
are playing, but don't over-populate an area either as this only slows down the game.
This is easier to do if you place objects while zoomed in a good distance.

Forest sections look best when they are used as a backdrop to other structures rather
than the primary object of attention. Also, they are large and impassable objects, so
keep in mind how this affects movement in your scenario.

■ TANK STATISTICS AND CAPABILITIES

In addition to giving the statistics for the tanks in the game, this section shows the development throughout World War II, in an attempt to clarify the relative strengths and weakness of tanks from different countries at different periods of the war. To avoid confusion, emphasis is given to those tanks available for use in *Panzer Commander*. Other models or tanks types are mentioned only in passing.

Stats are given for every tank model in the game. They are listed in the format that follows:

Name of the Tank

Weight: (in metric tons)

Hull Armor: (front/side/rear)

Turret Armor: (front/side/rear)

Main Gun: (ordnance type)

Top Speed: (in kilometers per hour)

Crew: (the usual number of men for this vehicle)

German Vehicles

It is interesting to note that at the height of their early war successes, the German forces often found themselves operating tanks that were markedly inferior to those of their enemies. While this was true in France and in North Africa, nowhere was it more true than in Russia, where the Germans, operating Panzer II, III and IV alongside Czech-built Panzer 38(t) were faced with the larger and more formidable Soviet T-34 and KV-1 tanks.

This single fact more than any other drove subsequent German tank designs and the early war models rapidly gave way to up-gunned Panzer IV, Panthers and the more vaunted Tiger I and Tiger II models. It also spurred the development of several Panzerjaeger and Jagdpanzer vehicles (literally "tank hunters", the German equivalent of tank destroyers) including the very successful Hetzer and Jagdpanther models.

Panzerkampfwagen 38t 'Skoda'

The Panzerkampfwagen (literally "armored fighting vehicle") 38(t) was the German designation for what was actually a Czechoslovakian tank built in the captured Skoda tank works. The Czechoslovak designed Armored Fighting Vehicle, was produced by/for the German military between 1938 and 1942. A total of 1411 Panzerkampfwagen 38(t) (versions A through G) had been built when production ceased in June of 1942.

Pz 38(t)A

Weight: 9.7

Hull Armor: 25/18/18

Turret Armor: 25/25/25

Main Gun: 37mm

Top Speed: 42

Crew: 4



The Panzerkampfwagen 38(t) was held in high regard for its simple design and the durability of its transmission. It was supported well by highly skilled German engineers who developed more complicated designs - more parts to be repaired, and more parts to wear out and break down. This made repairs more difficult.

The Panzerkampfwagen 38(t), whose design was based on the handling increases in armor thickness, was the durability of the transmission. It was estimated that the Czech produced Panzerkampfwagen 38(t) required more than three times as many maintenance hours before developing a desperate need for repairs.

The Panzerkampfwagen 38(t) fought in Poland and in the early conversions of the Panzerkampfwagen 38(t) for the entirety of the Second World War. When Germany invaded Russia, roughly 25% of the Panzer forces consisted of some version of the Panzerkampfwagen 38(t).

The variant available in *PANZER COMMANDER* was the Panzerkampfwagen 38(t) A7. These were produced between May of 1938 and May of 1942. It was crewed by four men (commander, driver, gunner, and loader). The 37mm KwK 38(t) Skoda A7 and two 7.92mm MG 30s (mounted). The power plant was a 125 HP Maybach HL 62 Pz. The armor was 25mm thick from 8mm to 25mm. Many rivets were used in the armor, which was very hazardous to the crew - a direct hit would cause the remainder of the rivet to fly off at very high velocities.

ILITIES

the tanks in the game, this section describes the tanks in an attempt to clarify the relative strengths and weaknesses of the tanks available for use in the game. They are listed in the game.

in the game. They are listed in the game.

vehicle)

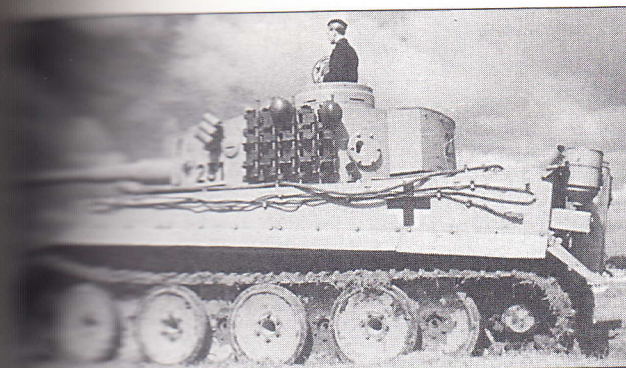
of their early war successes, the German tanks that were markedly inferior to those in North Africa, nowhere was there an operating Panzer II, III and IV along with the larger and more formidable Soviet tanks.

subsequent German tank designs and the Panzer IV, Panthers and the Tiger. This also spurred the development of several "tank hunters", the German equivalent of the successful Hetzer and Jagdpanther models.

Pz 38(t)A
Weight: 9.7
Hull Armor: 25/18/18
Turret Armor: 25/25/25
Main Gun: 37mm
Top Speed: 42
Crew: 4



erkampfwagen 38(t) (versions A through June of 1942.



*Overwatch:
A Tiger's crew
scans the
horizon,
Russia, 1943.*

The Panzerkampfwagen 38(t) was held in high regard by German AFV crews for its simple design and the durability of its transmission. While most German AFVs were designed well by highly skilled German engineers, they also tended to suffer from over-engineered designs - more parts to be assembled (meaning longer production times and more parts to wear out and break down (making repairs and the organization of repair shops more difficult). This was far from the case of the Panzerkampfwagen 38(t), whose design was simple, easy to produce, reliable, and capable of handling increases in armor thickness and armament size.

As the durability of the transmission was concerned, some German AFV crews estimated that the Czech produced Panzerkampfwagen 38(t) chassis could safely travel more than three times as many miles as its German designed and built counterparts before developing a desperate need for overhaul and maintenance.

The Panzerkampfwagen 38(t) fought in Poland, Norway, France and Russia (variants and conversions of the Panzerkampfwagen 38(t) fought on all fronts for the German armed forces for the entirety of the Second World War). As of June 1941, when Germany invaded Russia, roughly 25% of the entire strength of Germany's Panzer divisions consisted of some version of the Panzerkampfwagen 38(t).

The variant available in PANZER COMMANDER is the **Panzerkampfwagen 38(t)A**. 150 of these were produced between May of 1939 and November of 1939. The crew consisted of four men (commander, driver, gunner and loader). They were armed with a 37.1mm KwK 38(t) Skoda A7 and two 7.92mm MG37(t) (one co-axially, one bow mounted). The power plant was a 125 HP 6 cylinder Praga EPA. Armor thickness varied from 8mm to 25mm. Many rivets were used in the armor construction, which was very hazardous to the crew - a direct hit on a rivet head (you think this didn't happen?) would cause the remainder of the rivet to ricochet about the interior of the vehicle at very high velocities.



Panzer III and Variants

The Panzerkampfwagen III was produced by Germany between 1937 and 1943. A total of 5733 Panzerkampfwagen III (versions A through N) had been built when production ceased in 1943.

The Panzerkampfwagen III was the backbone of the Panzer divisions from the start of the Second World War through mid 1942. They fought on all fronts for the entirety of the Second World War, and were numerically the most important German AFV until this claim was taken over by the Panzerkampfwagen IV in 1943. The cause of this shift in importance was the ever upwardly spiraling gun/armor race - a race whose competition was fiercest on the Eastern front. The chassis and turret ring of the Panzerkampfwagen III could not accept the stress of carrying a high velocity 75mm gun. Due to this, it could no longer be considered a competitive main battle tank after 1942 (when the T-34 and KV-1 were appearing in increasing numbers on the Eastern front, where the vast majority of tank versus tank combat was taking place). However, the Panzerkampfwagen III chassis was by no means ever useless - it performed in many important roles during the Second World War, even after it was retired from duty as a front line main battle tank.

One important technological advance in the development of AFVs that found its start in the Panzerkampfwagen III was an intercom system for use by the AFV in combat. This allowed the AFV crew to communicate quickly and effectively with each other through microphones/headphones despite the extremely noisy environment that the inside of an AFV can be during combat (or at any time for that matter). The Panzerkampfwagen III was the first AFV design in the world to incorporate this idea, which subsequently became a standard feature on all German AFVs.

PANZER COMMANDER includes models F, G, H, J and L of the Panzer III series.

PzIII F

Weight: 20.3
Hull Armor: 30/30/30
Turret Armor: 30/30/30
Main Gun: 37mm
Top Speed: 40
Crew: 5



Panzerkampfwagen III F
between 1939 and 1940. The
of five men (commander,
loader and bow machine
The earlier vehicles which are
in PANZER COMMANDER were
a 37L46.5 KwK 35/36 and
MG34 (two coaxially, one bow m
powerfully armed. The power plan
at 265 HP. Armor thickness
were rearmd with a 50L42
line service as late as June

1940 and 1941, 600 Panzerkampfw
five men (commander, driver, gunner
were given a smaller main gun, while
COMMANDER were armed with a 50L42
(now mounted). The power plant was
265 HP. Armor thickness varied from
Panzerkampfwagen III be armed with
and suicidal? reason, the head of
and odds are he wound up in
devastating error - who kn
would have been (both in North
Panzerkampfwagen III had been armed with
forward? While not as lethal as the T-34
effectively with the T-34 series of Soviet AFV
for the 37L46.5 KwK 35/36, or possi
the gunner had the luxury of tungsten cor

Weight: 20.3
Hull Armor: 30/30/30
Turret Armor: 30/30/30
Main Gun: 37mm
Top Speed: 40
Crew: 5



power plant was a Maybach HL 120 TR
thickness varied from 10mm to 60mm
with the exception of appliqué armor
wheels (which then became standard
suspension (which also became stand
surviving Ausf H were rearmd with t
Seelowe (the planned invasion of Eng
verted to be able to travel underwater
vehicles were called Tauchpanzer III
Panzer Regiment to cross the Bug riv



Panzerkampfwagen III F
Produced between 1939 and 1940. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner). The earlier vehicles which are known as PANZER COMMANDER were armed with a 37L46.5 KwK 35/36 and two 7.92mm MG34 (two coaxially, one bow mounted), while later production vehicles were armed with a 50L60 KwK 39 as main armament. These vehicles were in front line service as late as June 1944 with the 116th Panzer Division in France.

The power plant was a Maybach HL 120 TRM 12 cylinder engine rated at 265 HP. Armor thickness varied from 10mm to 27mm. During 1942-1943, the Ausf F were rearmed with a 50L60 KwK 39 as main armament. These vehicles were in front line service as late as June 1944 with the 116th Panzer Division in France.

PzIII F

Weight: 20.3
Hull Armor: 30/30/30
Turret Armor: 30/30/30
Main Gun: 37mm
Top Speed: 40
Crew: 5



By mid 1942. They fought on all fronts and were numerically the most important German tank. The Panzerkampfwagen IV in 1943. The tank was part of an upwardly spiraling gun/armor race - a race to the top. The chassis and turret ring of the tank were stressed by carrying a high velocity main gun. The Panzerkampfwagen III was considered a competitive main battle tank after the war in increasing numbers on the Eastern Front (as tank combat was taking place). However, it was by no means ever useless - it performed well in the world war, even after it was retired from duty.

The development of AFVs that found its start in the Panzer system for use by the AFV in combat. The Panzer system quickly and effectively with each other in the extremely noisy environment that the Panzer (or at any time for that matter). The Panzer system in the world to incorporate this idea. The Panzer system on all German AFVs.

and L of the Panzer III series.

PzIII G

Weight: 20.3
Hull Armor: 30/30/30
Turret Armor: 30/30/30
Main Gun: 50mm
Top Speed: 40
Crew: 5



Between 1940 and 1941, 600 Panzerkampfwagen III G were produced. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner). Earlier production vehicles were given a smaller main gun, while the later production vehicles available in 1942-1943 were armed with a 50L42 KwK 38 and two 7.92mm MG34 (one coaxially, one bow mounted). The power plant was a Maybach HL 120 TRM 12 cylinder engine rated at 265 HP. Armor thickness varied from 10mm to 30mm. Adolf Hitler had ordered that Panzerkampfwagen III be armed with the 50L60 KwK 39 in 1940, but for some reason (and suicidal?) reason, the head of his ordnance department (his name is lost to history and odds are he wound up in a ditch) decided to keep using the medium velocity 50L42 KwK 38 as it had already passed its acceptance tests. This was a huge tactical and potentially devastating error - who knows what the outcome in numerous critical battles would have been (both in North Africa and on the Eastern Front) if all Panzerkampfwagen III had been armed with the high velocity 50L60 KwK 39 from late 1940 onward? While not as lethal as the 75L43 KwK 40 or 75L48 KwK 40, it could deal effectively with the T-34 series of Soviet AFVs at short range (as opposed to point blank range for the 37L46.5 KwK 35/36, or point blank range for the 50L42 KwK 38 unless the gunner had the luxury of tungsten cored APCR rounds).

PzIII H

Weight: 21.5
Hull Armor: 50/30/60
Turret Armor: 30/30/30
Main Gun: 50mm
Top Speed: 40
Crew: 5



Between 1940 and 1941, 308 Panzerkampfwagen III H were produced. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner). Armament consisted of a 50L42 KwK 38 and two 7.92mm MG34 (one coaxial, one bow mounted). The power plant was a Maybach HL 120 TRM 12 cylinder engine rated at 265 HP. Armor thickness varied from 10mm to 60mm. This version was nearly identical to the Ausf G, with the exception of appliqué armor plates to improve protection, larger road wheels (which then became standard on all vehicles) and a newer and more advanced suspension (which also became standard on all vehicles). During 1942-1943, many surviving Ausf H were rearmed with the 50L60 KwK 39. In preparation for Operation Seelowe (the planned invasion of England) some Panzerkampfwagen III H were converted to be able to travel underwater (for use during amphibious operations). These vehicles were called Tauchpanzer III, and were used on the Eastern front by the 18th Panzer Regiment to cross the Bug river at Patulin on June 22, 1941.

The power plant was a Maybach HL 120 TRM 12 cylinder engine rated at 265 HP. Armor thickness varied from 10mm to 60mm. This version was nearly identical to the Ausf G, with the exception of appliqué armor plates to improve protection, larger road wheels (which then became standard on all vehicles) and a newer and more advanced suspension (which also became standard on all vehicles). During 1942-1943, many surviving Ausf H were rearmed with the 50L60 KwK 39. In preparation for Operation Seelowe (the planned invasion of England) some Panzerkampfwagen III H were converted to be able to travel underwater (for use during amphibious operations). These vehicles were called Tauchpanzer III, and were used on the Eastern front by the 18th Panzer Regiment to cross the Bug river at Patulin on June 22, 1941.

There were 2616 **Panzerkampfwagen IIIJ** produced between 1940 and 1941. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner). Some of the earliest production vehicles carried the 50L42 KwK 38 as main armament, all later production

vehicles carried the 50L60 KwK 39 as main armament (eventually all were armed with the 50L60 KwK 39). All Ausf J were also armed with two 7.92mm (one coaxial and one bow mounted). The power plant was a Maybach HL 120 TRM 12 cylinder engine rated at 265 HP. Armor thickness varied from 10mm to 51mm (applied appliqué plates were now replaced with thicker plates on the production line, improved overall protection). Due to the better armor protection and greater killing ability of the Ausf J (as opposed to the Ausf H), it was called the 'Black Special' by the British who encountered it in North Africa.

PzIIIJ

Weight: 23.6
Hull Armor: 50/30/53
Turret Armor: 57/30/30
Main Gun: 50mm
Top Speed: 40
Crew: 5



During 1942, 653 **Panzerkampfwagen IIIJ** were produced. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner). Armament consisted of a 50L60 KwK 39 and two 7.92mm MG34 (one coaxial and one bow mounted). The power plant was a Maybach HL 120 TRM 12 cylinder engine

rated at 265 HP. Armor thickness varied from 10mm to 51mm, increased again in an attempt to keep up with the gun/armor race. However, the end was in sight for the 50L60 KwK 39 as the end of 1942 approached - it simply could not defeat the new series of Soviet AFVs at acceptable ranges. Fourteen Ausf L were still in service in Normandy in 1944, but were used only as command vehicles.

By the end of 1943, the Panzerkampfwagen III was almost entirely replaced by the Panzerkampfwagen IV as a main battle tank. The Panzerkampfwagen III's lack of ability to be armed with larger caliber and higher velocity main armaments was the main cause of its replacement by the Panzerkampfwagen IV. However, it was the basis for one of the most effective, numerically important and famous AFVs used by the Germans during the Second World War - armed with a 75L24 KwK 40 and later the 75L43 KwK 40 and 75L48 KwK 40 and converted into a turretless but well armored assault gun with a low profile (very useful in tank hunting/ambush situations) the Panzerkampfwagen III chassis soldiered on to the end of the Second World War as the Sturmgeschütz III.

Panzer IV and Variants

Between 1938 and 1945, 8579 Panzerkampfwagen IV (versions A through J) were produced. If the Panzerkampfwagen III can be called the backbone of the Panzer divisions for the first half of the Second World War, the title must pass to the Panzerkampfwagen IV

PzIVF2

Weight: 23.6
Hull Armor: 50/40/20
Turret Armor: 50/30/30
Main Gun: 75mm
Top Speed: 40
Crew: 5



the second (and far more desperate) year of the Second World War. In addition, the Panzerkampfwagen IV is regarded by many as one of the greatest AFVs of all time. The Panzerkampfwagen IV Ausf H was brought in the bocage of Normandy, and retreated across Russia during the final withdrawal from late 1943 onward. It had a better main armament (but still a 75mm) and other minor changes that distinguished the Panzerkampfwagen IV Ausf A, but they were not AFVs of the Second World War, it certainly was. Why? Because from 1935 through 1945, many different nations became obsolete. The Panzerkampfwagen IV remained a competitor of the war. The forethought present in its main armament and more armor, where the developmental potential and disappeared. A very good comparison is Messerschmitt's Bf 109 in the skies by 1944, in the hands of the Luftwaffe even in 1945. The same can be said for the Panzerkampfwagen IV, which was outwitted by veteran German Panzer crews against more advanced enemy AFVs in the later years of the war.

Panzer COMMANDER includes the D, F2, G, and H.

The Panzerkampfwagen IV F2 was powered by a 75mm cylinder engine. Armament consisted of a 75mm coaxial and one bow mounted. It had appliqué plates of the Ausf E, with thicker armor. Ausf F2 were produced (this total included Ausf F2), between March 1942 and May 1943. To the number that engaged in combat in North Africa, called it the 'Mark IV Sp'

wagen
1941.
man-
bow
pro-
KwK
ection

PzIII
Weight: 22.3
Hull Armor: 50/30/50
Turret Armor: 30/30/30
Main Gun: 50mm
Top Speed: 40
Crew: 5

as main armament (eventually all Ausf J were also armed with two 7.92mm MG34 machine guns). The power plant was a Maybach HL 120 TRM 12 cylinder engine. The armor thickness varied from 10mm to 51mm. The Ausf H had thicker plates on the production level. The better armor protection and power led to the Ausf H, it was called the 'Mark IV' in North Africa.

During 1942, 653 Panzerkampfwagen III were produced. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner). The armament consisted of a 50mm KwK 42 (one coaxial and one bow mounted). The power plant was a Maybach HL 120 TRM 12 cylinder engine. The armor thickness varied from 10mm to 51mm, increased again in the Ausf J. However, the end was in sight for the Panzer III - it simply could not defeat the T-34. Fourteen Ausf L were still in service as command vehicles.

The Panzer III was almost entirely replaced by the Panzer IV. The Panzerkampfwagen III's main armament and higher velocity main armament was replaced by the Panzerkampfwagen IV. However, it was a very important and famous AFV and was armed with a 75L24 KwK 40 and converted into a turretless but well useful in tank hunting/ambush situations. It was on to the end of the Second World War.

PzIVF2

Weight: 23.6
Hull Armor: 50/40/20
Turret Armor: 50/30/30
Main Gun: 75mm
Top Speed: 40
Crew: 5



*Back on the advance:
German infantry ride into action, 1944.*

PzIVG

Weight: 23.6
Hull Armor: 80/30/20
Turret Armor: 50/30/30
Main Gun: 75mm
Top Speed: 40
Crew: 5



second (and far more desperate) year of the Second World War. In addition, the Panzerkampfwagen IV is regarded by many as one of the greatest AFVs of all time. The Panzerkampfwagen IV Ausf H was fought in the bocage of Normandy, and served across Russia during the German withdrawal from late 1943 onward.

The Panzerkampfwagen IV had a better main armament (but still a 75mm gun), slightly better armor protection and other minor changes that distinguished them from their older brothers, the Panzerkampfwagen IV Ausf A, but they were all the same basic vehicle. While not the best AFV of the Second World War, it certainly ranks high as one of the best *designed* AFVs. Why? Because from 1935 through 1945, while numerous models of AFVs built by many different nations became obsolete and disappeared from the battlefield, the Panzerkampfwagen IV remained a competitive and dangerous opponent until the end of the war. The forethought present in its design allowed it to carry a more powerful main armament and more armor, whereas many other AFVs reached their maximum developmental potential and disappeared long before the end of the Second World War. A very good comparison is Messerschmitt's Bf 109 fighter. While not the best aircraft in the skies by 1944, in the hands of a skilled pilot it was dangerous and competitive even in 1945. The same can be said of the Panzerkampfwagen IV, which, when piloted by veteran German Panzer crews, more often than not held their own against more advanced enemy AFVs in the later days of the Second World War.

The Panzer COMMANDER includes the D, F2, G, H and J models of the Panzer IV series.

The Panzerkampfwagen IV F2 was powered by the 300 HP Maybach HL 120 TRM 12 cylinder engine. Armament consisted of a 75L43 KwK 40 and two 7.92 MG34 (one coaxial and one bow mounted). It had redesigned armor, more effective than the appliqué plates of the Ausf E, with thickness between 14mm and 30mm. Although only Ausf F2 were produced (this total includes twenty-five Ausf F1 that were converted to Ausf F2), between March 1942 and May 1942, their impact was far out of proportion to the number that engaged in combat. The British, who first faced the Ausf F2 in North Africa, called it the 'Mark IV Special' as it proved to be superior to any of the

British or American AFVs facing it at that time. In one engagement during the Eastern front, eleven Ausf F2 destroyed over sixty T-34 M41 in a two hour battle. While the greater experience and skill of the German Panzer crews in the war greatly influenced the outcome, the 75L43 KwK 40 was truly a decisive factor in such a victory possible, allowing the German Panzer crews to engage their enemy at a much greater range than ever before. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner).

Between May 1942 and March 1943 1275 **Panzerkampfwagen IV G** were produced. They were nearly identical to the Ausf F2, being powered by the same engine and carrying the same armament (a 75L43 KwK 40 and 2 7.92mm MG34s - one MG34 mounted coaxially and the other being mounted in the bow). Armor thickness was increased, now varying from 16mm to 35mm in thickness. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner).

PzIVH

Weight: 25.0

Hull Armor: 80/30/20

Turret Armor: 80/30/20

Main Gun: 75mm

Top Speed: 38

Crew: 5



From April 1943 onward, *schuerzen* (steel armored skirts, intended to protect against HEAT and small caliber high velocity rounds) began to appear on the Panzerkampfwagen IV. Also, from February 1943 onward, *ostketten* ('Eastern Tracks') wider tracks to assist with the softer and muddier ground on the Eastern front.

began to appear on the Panzerkampfwagen IV as well. From 1943 until the end of the Second World War, whenever a Panzerkampfwagen IV was being repaired or undergoing heavy maintenance it was generally brought 'up to standard' for whatever the standard was at that time (addition of *schuerzen*, *ostketten*, appliqué armor plates, current camouflage schemes, etc.). This resulted in a great number of variations among vehicles within the same unit. From mid 1943 through late 1944, most Panzerkampfwagen IV were also coated with *zimmerit* (a paste designed to deflect magnetic and/or 'sticky' anti tank charges used in close assault, by breaking up the smooth surface of an AFVs armor and denying magnetic charges metal on metal contact). This was in response to a perceived threat of greater use of specialized close assault weapons by enemy tank hunting teams, but as the threat never materialized it was no longer a standard option by the end of 1944.

Between March and April of 1943, an additional 412 **Panzerkampfwagen IV G** were produced armed with the 75L48 KwK 40. In addition, they were up armored to Ausf H/Ausf J standards and when fitted with *schuerzen* were nearly identical to the Ausf H/Ausf J. They were powered by a 300 HP Maybach HL 120 TRM 12 cylinder engine and carried two 7.92mm MG34 in addition to their main armament (one coaxial and one bow mounted). Armor thickness was between 20mm and 50mm, the heaviest armor any Panzerkampfwagen IV would ever carry into battle during the Second World War. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner).



From April 1943 through July 1944 3774 **Panzerkampfwagen IV H** were produced. They were nearly identical to the Ausf G, but with the classic late war Panzer armor and appliqué armor plates bringing the armor thickness for all Ausf H as well as all later Panzerkampfwagen IV to 80mm. The main armament was the 75L48 KwK 40 and two 7.92mm MG42 (one mounted coaxially and the other being mounted in the bow). The MG42 was sometimes mounted on a pintle for use against enemy aircraft and soft targets. The Maybach HL 120 TRM 12 cylinder engine was 300 HP. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner).

From June 1944 through March 1945 there were 1,000 **Panzerkampfwagen IV J** produced. One important difference between the Panzerkampfwagen IV and the Panzerkampfwagen IV J was the absence of the bow machine gun. It was removed to make room for the commander's cupola (almost any AFV crew member). This final version of the Panzerkampfwagen IV had 'all the bells and whistles'.

Schuerzen were standard. The main armament was a 7.92mm MG42 on a pintle mount for the commander (in addition to the 75L48 KwK 40 and two 7.92mm MG42 mounted coaxially and in the bow). Another interesting addition was the *Luftverteidigungswaffe* (a 92mm grenade projector mounted on the commander's cupola for defense and the firing of smoke grenades). Aside from the above mentioned changes, with the exception of a few minor changes, these changes were made to help simplify the crew (commander, driver, gunner, loader and bow machine gunner).

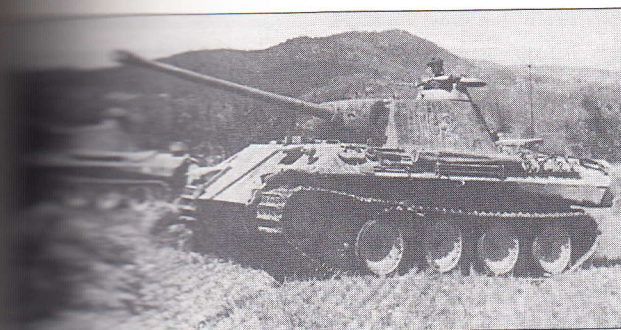
In addition to their use in German armor, the Panzerkampfwagen IV was also used by the armies of Finland, Hungary, and the Second World War. After the Second World War, the Panzerkampfwagen IV was used by the armies of Finland, Egypt, and the record of Panzerkampfwagen IV in combat was the 1967 Arab-Israeli war.

that time. In one engagement, they destroyed over sixty T-34 M41 in a week. The skill of the German Panzer crews was a factor. Some, the 75L43 KwK 40 was used to engage the Soviet Panzer crews to engage them more. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner).

75 Panzerkampfwagen IV G were produced, being powered by the same engine as the KwK 40 and 2 7.92mm MG34s (one MG34 mounted in the bow). Armor thickness was 5mm in thickness. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner).

From April 1943 onward, armor was replaced by steel armored skirts, intended to protect against HEAT and small caliber high velocity rounds began to appear on the Panzerkampfwagen IV. Also, from February 1943 onward, *ostketten* ('Eastern Tracks') wider tracks to assist with the softer and muddier ground on the Eastern front. IV as well. From 1943 until the end of the war, Panzerkampfwagen IV was being repaired or upgraded brought 'up to standard' for whatever the *Schuerzen*, appliqué armor plates, resulted in a great number of variations. From mid 1943 through late 1944, most were with *zimmerit* (a paste designed to deter use in close assault, by breaking up the magnetic charges metal on metal contact), but as the threat never materialized in 1944.

Final 412 Panzerkampfwagen IV G were produced, they were up armored to Ausf H. The *Schuerzen* were nearly identical to the Ausf H. Maybach HL 120 TRM 12 cylinder engine. Their main armament (one coaxial and one bow mounted 20mm and 50mm, the heaviest carried into battle during the Second World War, commander, driver, gunner, loader and



Panthers acting as artillery support, France, 1944.

From April 1943 through July 1944 3774 Panzerkampfwagen IV H were produced, being the Ausf H the classic late war Panzerkampfwagen IV. *Schuerzen* were almost standard and appliqué armor plates bringing the maximum thickness up to 50mm were used for all Ausf H as well as all later Panzerkampfwagen IV. Armament consisted of the 75L43 KwK 40 and two 7.92mm MG42 (one coaxial and one bow mounted). In addition, a 120mm MG42 was sometimes mounted on a pintle mount near the commander's cupola for use against enemy aircraft and soft targets. The standard power plant was a Maybach HL 120 TRM 12 cylinder engine. Armor thickness was between 20mm and 50mm. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner).

From June 1944 through March 1945 there were 1758 Panzerkampfwagen IV J produced. One important difference between the Ausf J and the Ausf H (and all other Panzerkampfwagen IV) was the absence of the electrical turret traverse motor in the Ausf J. It was removed to make room for greater fuel storage (a bad trade in the eyes of almost any AFV crew member). This final production version of the

Panzerkampfwagen IV had 'all the bells and whistles'. *Schuerzen* were standard, as was a 7.92mm MG42 on a pintle mount for the commander (in addition to the 75L43 KwK 40 and two 7.92mm MG42 mounted coaxially and in the bow). Another interesting addition was the *antirerteidigungswaffe* (a 92mm grenade

launcher mounted on the commander's cupola, it was used for added close quarters defense and the firing of smoke grenades). Its armor thickness varied from 20mm to 50mm. Aside from the above mentioned differences, it was very similar to the Ausf H with the exception of a few minor changes in the exhaust and suspension systems - these changes were made to help simplify production. The crew consisted of five men (commander, driver, gunner, loader and bow machine gunner).

In addition to their use in German armored formations, the Panzerkampfwagen IV was also used by the armies of Finland, Hungary, Bulgaria, Croatia and Rumania during the Second World War. After the Second World War, the Panzerkampfwagen IV soldiered on with the armies of Finland, Egypt, Spain, Jordan, Turkey and Syria. The last record of Panzerkampfwagen IV in combat was their use by the Syrian army during the 1967 Arab-Israeli war.

PzIVJ

Weight: 25.0
Hull Armor: 80/35/20
Turret Armor: 80/38/30
Main Gun: 75mm
Top Speed: 38
Crew: 5



Panther

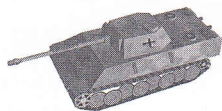
Once they had recovered from the shock, the German AFV engineers began to learn quite a few lessons from observing the excellent design of the Soviet built T-34 series of AFVs. There are many sources that state that the T-34 was the inspiration for the Panzerkampfwagen V, otherwise known as the 'Panther'. While the T-34 was probably not the *inspiration* for the Panzerkampfwagen V (German engineers generally tended to plan three or more years in advance when it came to AFVs), the concept of the Panzerkampfwagen VI was in existence as early as 1937 according to some sources, it can definitely be said that the design of the T-34 influenced which design of the Panzerkampfwagen V would be. In fact, one of the competing designs of the Panzerkampfwagen V was dropped from the competition because its silhouette was too similar to that of the T-34; there were honest concerns of maneuverability on the battlefield.

There were several key concepts included in the design of the Panzerkampfwagen V whose merits were recognized due to the effectiveness of the T-34:

- Well sloped armor, giving greater protection for less weight. The Panzerkampfwagen V was the first German designed and built AFV to incorporate heavily sloped armor.
- Wide tracks to reduce ground pressure and increase mobility on wet and uneven ground. The Panzerkampfwagen V had close to the lowest ground pressure of any heavy tank that saw combat during the Second World War.
- Usage of a high performance engine for high mobility. Although the Panzerkampfwagen V was nearly twice the weight of the Panzerkampfwagen III, its engine was more than twice as powerful. This (along with the wide tracks mentioned above and the most advanced suspension designed and deployed on any AFV during the Second World War) gave the Panzerkampfwagen V better cross country mobility and flat out speed than any other German medium or heavy AFV used during the Second World War.

Panther A

Weight: 45.5
Hull Armor: 80/40/40
Turret Armor: 110/45/45
Main Gun: 75mm
Top Speed: 46
Crew: 5



combat during the Second World War. The Panzerkampfwagen V was fast, tough, hard hitting, and while larger overall than the T-34 it had a very low silhouette for its size. One on one with a veteran crew manning it, the Panzerkampfwagen V was more than a match for all comers. Fortunately for Germany's wartime enemies, the odds in tank versus tank combat were rarely (if ever) one on one.

Panther D

Weight: 43.0
Hull Armor: 80/40/40
Turret Armor: 80/45/45
Main Gun: 75mm
Top Speed: 46
Crew: 5



In addition to the above mentioned factors, the Panzerkampfwagen had a very high velocity and *extremely* hard hitting main armament (the 75L70 KwK 42). The result of all these concepts and innovations being incorporated in the design of one single vehicle resulted in what many experts agree was the best all around AFV to see

statistics regarding Panzerkampfwagen V lost to enemy fire or enemy air attack.

army, after numerous combat evaluations, the M4 medium tanks ('Shermans') were considered the best.

One must consider that German AFVs were outnumbered at least five to one or more at the time the Panzerkampfwagen V was in large scale front line service, the statistics seem even more impressive. Despite the excellent design of the Panzerkampfwagen V and the usually high level of experience and skill of the crews brought in them (not to mention the usual losses at the platoon and higher levels), they were forced to face. This did not prevent them from becoming more skilled and experienced, much for even the best Panzer units.

COMMANDER presents all three known variants.

Between January of 1943 and September 1943, the Panzerkampfwagen V was produced. They were armed with the 75L70 KwK 42 (mounted coaxially). The first 250 produced (the Ausf D) were armed with the Maybach HL 120 engine rated at 595 HP. Due to design specifications by eight to ten different departments, the engine and transmission problems during the original 250, only 43 remained in service. The original 250 (also called Ausf D2) were produced (also called Ausf D2) were produced with the Maybach HL 120 P30 12 cylinder engine, this power plant was standard power plant for all subsequent Panzerkampfwagen V. The armor thickness ranged from 16mm to 110mm. The crew consisted of five men (commander, gunner, loader, bow machine gunner).

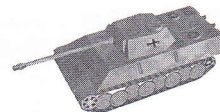
Between August of 1943 and May of 1944, the Panzerkampfwagen V was produced. Armament consisted of a 75L70 KwK 42 (mounted coaxially, one bow mounted, and occasionally one anti-air). It was powered by a Maybach HL 120 P30 12 cylinder engine. The armor thickness ranged from 16mm to 110mm. The crew consisted of five men (commander, gunner, loader and bow machine gunner). The Panzerkampfwagen V was a redesigned turret and eliminate a shell trap on the turret (as opposed to an unwieldy spring mounted turret).

Panther D

Weight: 43.0
Hull Armor: 80/40/40
Turret Armor: 80/45/45
Main Gun: 75mm
Top Speed: 46
Crew: 5

**Panther G**

Weight: 44.8
Hull Armor: 80/50/40
Turret Armor: 100/45/45
Main Gun: 75mm
Top Speed: 46
Crew: 5



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any's wartime enemies, the odds in tank
on one.

statistics regarding Panzerkampfwagen V effectiveness versus enemy AFVs:
70% of all Panzerkampfwagen V lost to enemy action were victims of enemy
fire or enemy air attack.

The German Army, after numerous combat evaluations, determined that on average it
took the M4 medium tanks ('Shermans') to destroy one Panzerkampfwagen V

When you consider that German AFVs
were outnumbered at least five to one or
more the time the Panzerkampfwagen
went into large scale front line service, the
statistics seem even more impres-
sive. Despite the excellent design of the
Panzerkampfwagen V and the usually high
level of experience and skill of the crews

fighting in them (not to mention the usually superior tactics used by Germany's
forces at the platoon and higher levels), they could not defeat the numerical supe-
riority which they were forced to face. This disadvantage, combined with opponents who
were themselves becoming more skilled and more experienced as the war dragged on,
was too much for even the best Panzer units of the Germany military to handle.

This COMMANDER presents all three known production variants of the Panther: D,
E, and G.

Between January of 1943 and September 1943, 850 total **Panzerkampfwagen VD**
were produced. They were armed with the excellent 75L70 KwK 42 and a 7.92mm
MG 34 (mounted coaxially). The first 250 produced carried the Maybach HL 210 P 30
12 cylinder engine rated at 595 HP. Due to insufficient testing time, an under-powered
engine (as opposed to the engine it was intended to carry), and a combat weight that
exceeded design specifications by eight tons, these first 250 Ausf D were plagued by
engine and transmission problems during their combat debut in *Operation Zitadelle*.
Of the original 250, only 43 remained in service by August of 1943. The last 600 Ausf
D produced (also called Ausf D2) were powered by the much improved Maybach HL
230 P30 12 cylinder engine, this power plant rated at 715 HP. This engine became the
standard power plant for all subsequent versions of the Panzerkampfwagen V. Armor
thickness ranged from 16mm to 110mm, and most armor facings were extremely well
sloped. The crew consisted of five men (commander, driver, gunner, loader and bow
machine gunner).

Between August of 1943 and May of 1944, 2000 **Panzerkampfwagen VA** were pro-
duced. Armament consisted of a 75L70 KwK 42 and two to three 7.92mm MG 34 (one
coaxial, one bow mounted, and occasionally one mounted on the commander's cupo-
la). It was powered by a Maybach HL 230 P30 12 cylinder engine rated at 715 HP.
Armor thickness ranged from 16mm to 110mm, and most armor facings were
extremely well sloped. The crew consisted of five men (commander, driver, gunner,
loader and bow machine gunner). The main differences between the Ausf A and the
earlier Ausf D were a redesigned turret and mantlet (to provide better sloping/protec-
tion and eliminate a shell trap on the mantlet), a ball mount for the bow MG position
(as opposed to an unwieldy spring mount which the ad hoc bow MGs most often

mounted on Ausf D usually used), slight redesign/changes in the engine and transmission (to eliminate the teething troubles the Ausf D suffered from), a new commander's cupola, and light armor skirts to protect the upper track and sprocket wheels (similar to, but not actually *schuerzen*). With the teething troubles of the Ausf D fixed, the Ausf A was a truly formidable AFV.

Between March of 1944 and April of 1945, 3126 Panzerkampfwagen VI Ausf E were produced. Armament consisted of a 75L70 KwK 42 and two 7.92mm MG 34s (one coaxial, one bow mounted) and a 7.92mm MG42 (mounted on the commander's cupola). It was powered by a Maybach HL 230 P30 12 cylinder engine rated at 750hp. The armor thickness ranged from 16mm to 110mm, and most armor facings were extremely well sloped. The crew consisted of five men (commander, driver, gunner, loader, and machine gunner). The main differences between the Ausf G and the earlier versions were the removal of the driver's vision slit and its replacement with a new periscope and the addition of a *nahverteidigungswaffe* (a 92mm grenade launcher mounted on the commander's cupola).

One interesting side note - the next planned version of the Panzerkampfwagen VI was the Ausf F. It was intended to be equipped with a FG 1250 infrared sight and a telescopic range finder. For night combat operations, they ideally would have operated in platoons of five vehicles alongside a SPW 251/20 Uhu ('Owl') equipped with a powerful infrared searchlight. Fifty Ausf G actually used the FG 1250 infrared sight in combat on the Eastern front during the final months of the war, although it is unknown if they conducted any operations with supporting SPW 251/20s.

Much like the Panzerkampfwagen III and Panzerkampfwagen IV, the Panzerkampfwagen V chassis was also used for numerous variants and variant prototypes. The most famous of these (and the most effective tank destroyer to see action during the Second World War) was the Jagdpanzer V (also known as the 'Jagdpanther') which had better armor thickness and protection than the Panzerkampfwagen V and mounted the even deadlier 88L71 KwK 43.

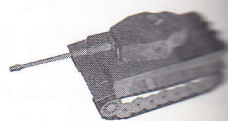
Tiger I

The Panzerkampfwagen VI, otherwise known as the 'Tiger I' was the first German purpose designed and built heavy tank. It was designed to carry the 88L56 KwK 36 (a cousin of the famous German '88', dual purpose anti aircraft/anti tank gun), by far the most powerful tank mounted gun at the time of its conception.

In addition, it was designed with thicker armor plates (though not well sloped) than any other AFV in the world. With this massive firepower and excellent armor protection, a very low silhouette for its size, and sinister shape, it soon was the nightmare of choice for Allied tank crewmen around the world. It did have several faults however. The early production vehicles were under-powered for their weight, which gave them poor cross-country performance. All versions of the Tiger I had poor range due to the massive weight of the vehicle. And earlier vehicles suffered from teething troubles with the transmission, which led to break downs more frequent in occurrence than with the

Tiger I

Weight: 55.0
Hull Armor: 100/80/82
Turret Armor: 100/80/80
Main Gun: 88mm
Top Speed: 38
Crew: 5



Panzerkampfwagen III or Panzerkampfwagen V. The Panzerkampfwagen VI Ausf E had a huge impact on the war. In the later years of the Second World War, the Germans fought more and more defensive battles (as opposed to the offensive battles of the early years) and maneuver that took place in the defensive. The Panzerkampfwagen VI Ausf E was increasingly used in these battles. The tanks were organized into special *scharfschützende* units and attached at the Corps or Army level. The *scharfschützende* units were hand picked, and near the front lines. These factors, combined with the fact that the Tiger I was always in the center of the most desperate battles, gave it a fame (or notoriety) totally out of proportion to the numbers produced. The Panzerkampfwagen VI Ausf E was produced in a forested swamp near Leningrad. The Germans could not overcome such a poor choice of location for a battle tank. The Soviet AT gun crewmen quickly learned the frontal armor of the massive Tigers, so they often fired at their tracks and wheels. Immobilized, the Tiger I was easy to set fire to them, to prevent the Soviets from using them. On an inauspicious start, they quickly developed a reputation as a component from the time of their next employment until the end of the Second World War.

From mid 1943 through late 1944, most Panzerkampfwagen VI were equipped with *zimmerit* in response to a perceived threat from assault weapons by enemy tank hunting teams. The *zimmerit* was no longer a standard option by the end of the war.

Between July of 1943 and August of 1944, the Tiger I was produced by Germany. It had a crew complement of five men (commander, driver, gunner, loader and bow machine gunner). The Tiger I was armed with a 88L56 KwK 36, two 7.92mm MG34 (one coaxial, one bow mounted) and a 92mm AP mines attached to the hull. The power plant was a Maybach HL 230 P30 12 cylinder engine rated at 750hp.

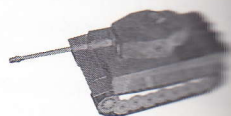
), slight redesign/changes in the engine, and troubles the Ausf D suffered from. The armor skirts to protect the upper machine gun (Schürzen). With the teething troubles of the formidable AFV.

of 1945, 3126 Panzerkampfwagen VI Ausf E had a huge impact on the course of the battles it was equipped with a FG 1250 infrared sight and night operations, they ideally would have been equipped with the SPW 251/20 Uhu ('Owl') equipped with a night vision slit and its replacement with a 92mm grenade launcher (a 92mm grenade launcher).

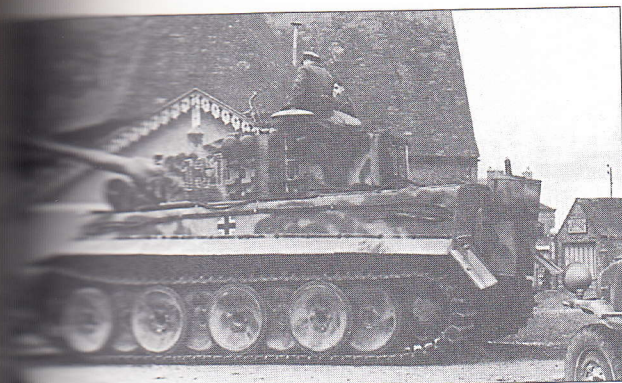
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III and Panzerkampfwagen IV, the Panzerkampfwagen VI Ausf E was increasingly more and more 'in its element'. The crews of the *schwere Panzerabteilung* were hand picked, and nearly always experienced combat veterans. These factors, combined with the fact that Panzerkampfwagen VI Ausf E were nearly always in the center of the most desperate battles, gave the Panzerkampfwagen VI Ausf E a fame (or notoriety) totally out of proportion with the relatively small number of them produced. The Panzerkampfwagen VI Ausf E first saw combat on August 29, 1942 in a forested swamp near Leningrad. Not even a powerful vehicle like the Tiger could overcome such a poor choice of location for the employment of a heavy main battle tank. The Soviet AT gun crewmen quickly realized they could not penetrate the frontal armor of the massive Tigers, so they promptly immobilized them by shooting their tracks and wheels. Immobilized, the Tiger crews abandoned their vehicles and set fire to them, to prevent the Soviets from capturing or studying them. Despite such an inauspicious start, they quickly developed a reputation as a dangerous and tough opponent from the time of their next employment (near Tunisia in December of 1942) until the end of the Second World War.

Tiger I
Weight: 55.0
Hull Armor: 100/80/82
Turret Armor: 100/80/80
Main Gun: 88mm
Top Speed: 38
Crew: 5



armor plates (though not well sloped) than massive firepower and excellent armor protection. Its boxy, box-like shape, it soon was the nightmare of the world. It did have several faults however: it was overpowered for their weight, which gave them poor range due to the teething troubles with the more frequent in occurrence than with the



*Defending the Fatherland:
A Tiger on alert in Germany, 1945.*

Panzerkampfwagen III or Panzerkampfwagen IV. Despite these problems, the Panzerkampfwagen VI Ausf E had a huge impact on the course of the battles it was equipped with. In the later years of the Second World War, with Germany's Panzer units fighting more and more defensive battles (as opposed to the massive battles of breakthrough and maneuver that took place in the earlier years of the Second World War) the Panzerkampfwagen VI Ausf E was increasingly more and more 'in its element'. The tanks were organized into special *schwere Panzerabteilung* (heavy tank battalions) and attached at the Corps or Army level. The crews of the *schwere Panzerabteilung* were hand picked, and nearly always experienced combat veterans. These factors, combined with the fact that Panzerkampfwagen VI Ausf E were nearly always in the center of the most desperate battles, gave the Panzerkampfwagen VI Ausf E a fame (or notoriety) totally out of proportion with the relatively small number of them produced. The Panzerkampfwagen VI Ausf E first saw combat on August 29, 1942 in a forested swamp near Leningrad. Not even a powerful vehicle like the Tiger could overcome such a poor choice of location for the employment of a heavy main battle tank. The Soviet AT gun crewmen quickly realized they could not penetrate the frontal armor of the massive Tigers, so they promptly immobilized them by shooting their tracks and wheels. Immobilized, the Tiger crews abandoned their vehicles and set fire to them, to prevent the Soviets from capturing or studying them. Despite such an inauspicious start, they quickly developed a reputation as a dangerous and tough opponent from the time of their next employment (near Tunisia in December of 1942) until the end of the Second World War.

From mid 1943 through late 1944, most Panzerkampfwagen VI Ausf E were also coated with *zimmerit* in response to a perceived threat of greater use of specialized close assault weapons by enemy tank hunting teams, but as the threat never materialized it was no longer a standard option by the end of 1944.

Between July of 1943 and August of 1944, 1354 Panzerkampfwagen VI Ausf E were produced by Germany. It had a crew complement of five men (commander, driver, gunner, loader and bow machine gunner). The earlier vehicles were armed with an 88L56 KwK 36, two 7.92mm MG34 (one coaxial, one bow mounted), and several command detonated AP mines attached to the hull and turret for added close defense versus enemy infantry. The power plant was a Maybach HL 210 P 45 12 cylinder engine rated



Ferdinand
number 100
resembling
Tiger II.

at 600 HP, and as a result the earlier Panzerkampfwagen VI Ausf E were underpowered and their off road performance suffered. Early Panzerkampfwagen VI Ausf E had several transmission problems, which affected battlefield readiness. Armor thickness varied from 25mm to 100mm, but there was little sloping on most armorings. However, armor protection was still excellent due to the sheer thickness and advanced welding techniques incorporated with the armor plate. The later production vehicles had several design and armament improvements. The engine was now the powerful Maybach HL 230 P 45 12 cylinder rated at 700 HP. A 7.92mm MG42 was added to the commander's cupola, as was a *nahverteidigungswaffe*. The common detonated AP mines were dropped from usage, probably to the relief of Panzergrenadiers everywhere. The transmission problems were mostly fixed, and many of the parts on the later Panzerkampfwagen VI Ausf E were interchangeable with later versions of the Panzerkampfwagen V to simplify production, maintenance and repair. A clever device used by the Tiger I (as well as some Panzerkampfwagen III and most Panzerkampfwagen V D) was a rotating ring, with markings like a clock face from 1 to 12 with finer subdivisions as well) that ran the circumference of the inside of the commander's cupola. The ring rotated in the opposite direction (but at the same speed) of the turret. This allowed the AFV commander to instantly tell the turret's position relative to the hull's axis - something easily forgotten under the stresses of AFV combat. It was also an aid for bringing the gun on-line with a target quickly. The gunner had a clock scale as well - when the commander gave the gunner a bearing ("gunner! T-34! 2 o'clock!") the gunner simply aligned his scale with the bearing given by the commander and the target appeared in his sights.

Some 90 Panzerkampfwagen VI Ausf E chassis not accepted for production were converted into Panzer Jaeger VIs (otherwise known as Panzer Jaeger Tigers, Ferdinands, or 'Elefants'). This was a Panzerkampfwagen VI E chassis with a heavily armored box in lieu of a turret, armed with an 88L71 KwK 42/2.

Panzerkampfwagen VI B, otherwise known as the most powerful AFV to see combat. The name suggests it was a later model of the Tiger II, but it was an entirely new design, and resembled the Panzerkampfwagen VI Ausf E. It had worse off road mobility and a shorter range. However, this was the posture of the Tiger II anyway. The armor was almost impervious to enemy shell hits. The Tiger II was common in existence could penetrate the armor of a T-34 to get there and survive long enough to get there and survive long enough. Over 80% of all Tiger II lost in combat were destroyed by their own crews and not by enemy attack - and most of these were immobilized without loss to the crew. It was impossible to tow or recover due to its weight. The Tiger II was usually destroyed by their own crews and not by enemy attack. The power of a functioning Tiger II in combat was immense. It destroyed the first and last of enemy tanks destroyed in this action in 1945.

Between December of 1943 and March of 1945, 489 Panzerkampfwagen VI Ausf B were produced by Germany. The Tiger II had a crew complement of five men (commander, driver, gunner, loader and bow machine gunner). It was powered by a Maybach HL 230 P 30 12 cylinder engine rated at 700 HP. It was armed with an 88L71 KwK 43 - perhaps the best all around combat during the Second World War. The Tiger II Ausf B destroyed a T-34 at a range of 1,000 yards. The Tiger II Ausf B was equipped with three 7.92mm MG42 machine guns (two on the hull and one on the commander's cupola) and a 128L55 KwK 44 gun. The gun was carried, ranging from 40mm to 185mm! The armor was sloping, made the *Königstiger* nearly invulnerable from the front. For most of 1944, the major tank of the German armor, but it was no longer a standard option.

As with most other German AFVs, some were converted for use as tank destroyers. In 1944, the Jagdpanzer VI Ausf B (also known as the Tiger II Ausf B) was produced. Its armament consisted of a 128L55 KwK 44 gun. The Tiger II Ausf B was the last of the Second World War - there are several examples of a U.S. M26 'Pershing' at a range of 1,000 yards. The armor of a U.S. M26 'Pershing' at a range of 1,000 yards is a thickness varying between 40mm and 100mm.



Panzerkampfwagen VI Ausf E
Tiger I

er Kampfwagen VI Ausf E were...
d. Early Panzerkampfwagen VI Ausf E...
affected battlefield readiness. Armor...
was little sloping on most armor...
excellent due to the sheer thickness...
with the armor plate. The later production...
improvements. The engine was now...
rated at 700 HP. A 7.92mm MG42...
a *nahverteidigungswaffe*. The...
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not accepted for production were...
as Panzer Jaeger Tigers, Ferdinands...
E chassis with a heavily armored box...
2/2.

Panzerkampfwagen VI B, otherwise known as the Tiger II is regarded by many...
as the most powerful AFV to see combat during the Second World War...
...suggests it was a later model of the Panzerkampfwagen VI E, it was...
...an entirely new design, and resembled a larger Panzer-kampfwagen V...
...the Panzerkampfwagen VI Ausf E. Even heavier than the Ausf E, the Ausf...
...worse off road mobility and a shorter range, making it an almost purely...
...weapon. However, this was the posture of most German AFVs during the last...
...World War II anyway. The armor was incredibly thick and fairly well sloped...
...almost impervious to enemy shell hits against the frontal armor. The largest...
...common in existence could penetrate the frontal armor at close range - if they...
...to get there and survive long enough to get off an accurate shot. Most were...
...successful. Over 80% of all Tiger II lost in combat were the victims of enemy artillery...
...attack - and most of these were mobility kills. In other words, the vehicle...
...immobilized without loss to the crew, but the Panzerkampfwagen VI B was...
...impossible to tow or recover due to its great weight; such damaged vehicles...
...destroyed by their own crews and/or abandoned. If one quote could sum...
...power of a functioning Tiger II in combat, it would probably be this one:

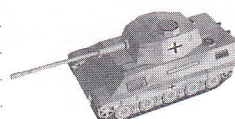
*...fired and destroyed the first and last of the Stalin tanks...My own personal...
...of enemy tanks destroyed in this action was 39." - Karl Korner, sSSPzAbt...
...1945.*

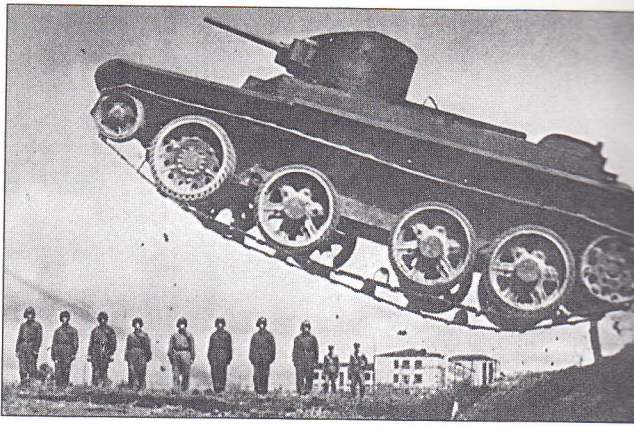
Between December of 1943 and March of 1945, 499 Panzerkampfwagen VI Ausf B...
were produced by Germany. The Tiger II...
had a crew complement of five men (com...
mander, driver, gunner, loader and bow...
machine gunner). It was powered by a...
Maybach HL 230 P 30 12 cylinder engine...
rated at 700 HP. It was armed with an...
128L71 KwK 43 - perhaps the best all around lethal main armament carried by an AFV...
in combat during the Second World War. *There is one account of a Panzerkampfwagen...
VI Ausf B destroying a T-34 at a range of 4.5km!* In addition to its main armament...
the Ausf B was equipped with three 7.92mm MG42 (one coaxial, one bow mounted...
and one on the commander's cupola) and a *nahverteidigungswaffe*. Armor thickness...
varied, ranging from 40mm to 185mm! This massive thickness, combined with good...
sloping, made the *Königstiger* nearly invulnerable to direct fire attacks through its...
frontal facing. For most of 1944, the majority of Tiger II were also coated with *zim...
merit*, but it was no longer a standard option by the end of 1944.

As with most other German AFVs, some Panzerkampfwagen VI Ausf B chassis were...
converted for use as tank destroyers. In this case, the result was the gargantuan...
Jagdpanzer VI Ausf B (also know as the 'Jadgtiger', or 'Hunting Tiger'). The main...
armament consisted of a 128L55 KwK 44 (the most powerful vehicular mounted gun...
of the Second World War - there are several accounts of it penetrating the frontal...
armor of a U.S. M26 'Pershing' at a range of 2100m) and well sloped armor plate with...
a thickness varying between 40mm and 250mm.

Tiger II

Weight: 69.7
Hull Armor: 100/80/80
Turret Armor: 185/80/80
Main Gun: 88mm
Top Speed: 38
Crew: 5





*Shown Below:
A pre-war
Soviet tank
performing
the stuff...*

Soviet Vehicles

Ironically, though the Soviets began the war with an advantage in terms of the number and quality of armored combat vehicles, Stalin's purges left the Red Army bereft of experienced leadership. In addition, trained tank operators and maintenance technicians were difficult to come by, with the result that, when the German invasion began, much of the Soviet tank corps were in a state of disrepair and many of the tank crew had had only a few hours of training with their vehicles. Further, half of the Soviet tank strength was assigned as support vehicles for infantry divisions, a role that left them unable to concentrate in sufficient force to repel the German Panzer divisions.

Still, the Red Army managed to give the Germans some nasty surprises – not the least of which were the T-34 and KV-1, tanks which were much better armed and armored than the biggest contemporary German tanks. These had been distributed to forward units in great secrecy and, though deployed only in limited numbers in 1941, these vehicles made a big impression on the German Panzer Corps and would heavily influence subsequent tank designs in Germany and in other parts of the world.

In addition, the Soviets learned some hard lessons from the Germans regarding the use of tanks and began forming more dedicated armored divisions which allowed them to employ these vehicles more effectively against German armor.

BT-5 and BT-7

Although the Soviets experimented with numerous tank designs before the war, the BT-5 and BT-7 "fast" tanks were the best of the pre-war tanks employed by the Red Army. High mobility and high reliability coupled with a 45mm anti-tank gun made these vehicles highly favored by the Soviet tank troops. The BT series of tanks featured a unique suspension system copied partly from the contemporary designs of the American J. Walter Christie. These were characterized by relatively

BT-5	
Weight:	11.5
Hull Armor:	13/13/6
Turret Armor:	13/13/6
Main Gun:	45mm
Top Speed:	72
Crew:	3



wheels (the wheels which actually operate either with or without the suspension removed due to the time tanks distinguished themselves in the invasion of eastern Poland.

At the end of 1932 designs were drawn up for a tank more modern than its predecessors, a coaxial machine gun. A stronger engine would be required in service until 1941 when its armament was replaced by German tanks.

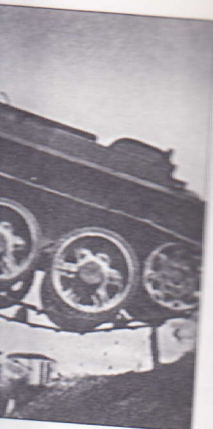


Production of BT-5 tanks began in 1932. It was armed with a 45mm DT machine gun, (coaxially mounted with the main gun). Armor was moderately sloped and 13mm. The crew consisted of three men. The BT-7 was very similar, but it had the turret armor.

BT-4 Series

Not only was the T-34 numerous, but in 1940 (when it was first delivered to Soviet tank units) it was also the best tank design in the world. If the Panzerkampfwagen IV is arguably the best overall medium tank of the Second World War, the T-34 should probably share the honors. Many of the basic features of the 'Panther' (produced from 1943 through 1945) were inspired by the strengths of the T-34 were:

- Incredible power to weight ratio for its class. Other AFVs were carrying 100-200 HP.
- Awesome mobility over nearly any type of terrain. It had a well designed suspension, and a power shift. It had much narrower tracks. During the war, when the T-34 gave the German infantry had their own name for it: 'Panther'.



Small Tank
A proven
Soviet tank
performs
the task.

...wheels (the wheels which actually contact the ground through the treads) ...operate either with or without the treads, although in actual practice the ...seldom removed due to the time required to perform this operation. The ...tanks distinguished themselves in combat with the Japanese and in the ...of eastern Poland.

...end of 1932 designs were drawn up for the BT-5. It had more a more pow- ...ment than its predecessors, a coaxial machine gun, radio equipment, and a ...interior. A stronger engine would provide greater speed and mobility. It ...in service until 1941 when its armor and guns became obsolete against the ...German tanks.

Weight:	12,000
Armor:	13/13/13
Gun:	45mm
Speed:	46
Crew:	3



Though outwardly very similar in appear-
ance to the BT-5, the BT-7 featured sever-
al improvements, including a better
engine, heavier armor and fully-welded
construction, as opposed to the riveted
construction employed in previous tanks
in the series. Both the **BT-5** and the **BT-7**
are available in PANZER COMMANDER.

with an advantage in terms of the ...
lin's purges left the Red Army ...
tank operators and maintenance ...
that, when the German invasion ...
of disrepair and many of the tank ...
vehicles. Further, half of the Soviet ...
infantry divisions, a role that left ...
the German Panzer divisions.

...some nasty surprises - not the least ...
were much better armed and armored ...
These had been distributed to forward ...
ly in limited numbers in 1941, these ...
Panzer Corps and would heavily ...
in other parts of the world.

...from the Germans regarding the ...
ed armored divisions which allowed ...
against German armor.

Weight:	11,500
Armor:	13/13/6
Gun:	45mm
Speed:	72



...ed partly from the contemporary ...
e were characterized by relatively

...production of BT-5 tanks began in 1932. It was armed with a 45mm gun and one ...
...mm DT machine gun, (coaxially mounted). It was powered by a 12 cylinder M-5 ...
...engine. Armor was moderately sloped, with thickness varying between 5mm ...
...mm. The crew consisted of three men (commander-loader, driver and gunner).
...The BT-7 was very similar, but it had the new M-17T engine, rated at 450HP, and ...
...turret armor.

T34 Series

Not only was the T-34 numerous, but in ...
...1940) (when it was first delivered to Soviet ...
...units) it was also the best tank design ...
...in the world. If the Panzerkampfwagen V ...
...is arguably the best overall medium tank ...
...of the Second World War, the T-34 should ...
...probably share the honors. Many of the ...
...basic features of the 'Panther' (produced ...
...from 1943 through 1945) were inspired by T-34 actually deployed by 1940. Some of ...
...the strengths of the T-34 were:

- Incredible power to weight ratio for its time. It carried a 500 HP engine when most other AFVs were carrying 100-200 HP engines.
- Awesome mobility over nearly any type of terrain. This was a result of wide tracks, a well designed suspension, and a powerful engine; most other AFVs of the same period had much narrower tracks. During the bitter Winter battles of 1941 on the Eastern front, when the T-34 gave the Germans a hard and merciless wake up call, the German infantry had their own name for the T-34, 'The Snow King' given to it for its ability to operate in almost any extreme of climate, weather or ground conditions.

T34/41

Weight:	26.5
Hull Armor:	45/45/47
Turret Armor:	52/52/45
Main Gun:	76.2mm
Top Speed:	46
Crew:	4



- Great armor protection and armor design. The T-34 had sloping armor, which any other AFV designs had begun to incorporate it, which also allowed for some weight; sloped armor produces a lower silhouette and protects against thicker armor without a slope.
- Good armament. At the time of its delivery, most other AFVs had a main gun that was between 37mm and 50mm in size; the T-34 was armed with a powerful 76mm velocity 76mm gun.

The early T-34s did have some problems. The crew compartment was cramped. Communications equipment was inferior to that of German AFVs (the Germans often defeated Soviet armored units early in the war despite horrendous odds – superior communications and tactics made this possible). The transmission of the earlier models was prone to break down (but then again, all early model AFVs suffered this problem). Finally, a two-man turret (as opposed to the three-man turret of most German AFVs) lowered the effective rate of fire of the main armament and reduced combat efficiency in general.

Despite these problems, the early T-34 was nearly too much for the German military to handle. In the first year of combat on the Soviet front, the biggest threats to the T-34 (in order of severity) were:

1. Air attack. (German infantrymen on the Eastern front affectionately called Soviet pilots 'Infantrymen with wings'.)
2. Direct fire from an 8.8cm FlaK 18/36 or other really large gun at medium or close range. (Recall that these types of weapons were not mobile at this point in the war.)
3. Heavy artillery fire (An immobilized T-34 was much less of a threat.)
4. A very close range hit from a first line tank or AT gun to the side or rear armor.
5. Close assault by German infantry (The reason that German infantry were the best tank killers of World War II was that they had to learn to kill T-34 without AT guns.)

T34/43

Weight: 30.9
Hull Armor: 47/60/47
Turret Armor: 70/52/53
Main Gun: 76.2mm
Top Speed: 55
Crew: 4



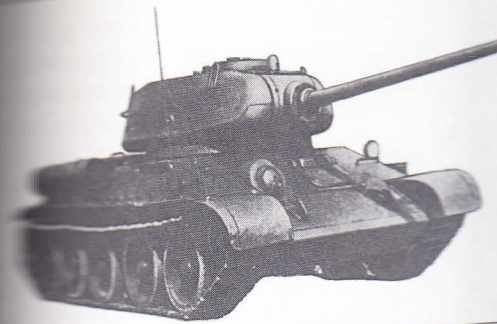
In other words, the T-34 was a dangerous opponent that was very difficult to kill. Add to this the fact that they outnumbered their foes on most occasions and you can understand why the Germans placed such a premium on tactical skill and initiative – it was their only hope.

As the war progressed, the T-34 became much improved and many (if not all) of its original faults disappeared. This, combined with Soviet AFV crews who were now becoming more experienced (and thus more skilled) and better Soviet armored tactics in general (although not ever really the equal of the Germans) made the T-34 an increasingly dangerous foe.

Between 1939 and 1945, Russia produced roughly 64500 T-34 of one model or another. PANZER COMMANDER provides four models of the T-34 series, the T-34/41, T-34/42, T-34/43 and the T-34/85.

T34/42

Weight: 28.5
Hull Armor: 47/47/47
Turret Armor: 65/65/47
Main Gun: 76.2mm
Top Speed: 55
Crew: 4



The Model 41 the original model, had a production run of 1,000 units. It was sent with the western military districts on June 22, 1941. It was armed with a 76.2mm cannon and two 7.62mm DT MG (one bow machine gun). It was powered by a 12 cylinder V-2 diesel engine rated at 500 hp. The armor thickness varying between 20mm and 55mm. The

Weight: 28.5
Hull Armor: 47/60/47
Turret Armor: 90/75/60
Main Gun: 85mm
Top Speed: 55
Crew: 5



During the war, despite the fact that it was to rapidly intended to replace the T-34, but high demand and two models were mounted, one coaxial). It was powered by a 12 cylinder V-2 diesel engine. Armor was well sloped, with thickness varying between 45mm and 60mm. The crew consisted of four men (commander, driver, gunner and loader).

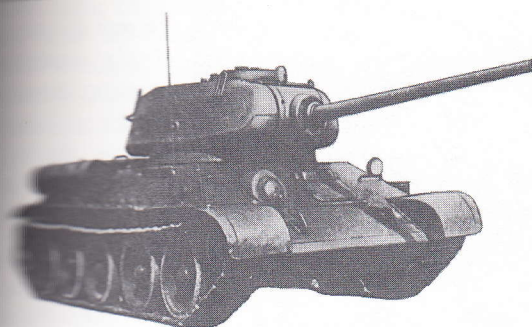
Roughly 9000 T-34/43 were built during 1942. It was lost in three battles during the summer of 1942. The T-34/42, the only difference being minor improvements. It was armed with a 76L41 cannon and two 7.62mm DT MG (one bow machine gun). It was powered by a 12 cylinder V-2 diesel engine. The armor was sloped, with thickness varying between 45mm and 60mm. The crew consisted of four men (commander, driver, gunner and loader).

Between 1944 and 1945, 29500 T-34/85 were built. British counterparts, the Soviets found their AFV solution in mid 1943 (this coincides with the appearance of the T-34/85). Their solution was to mount a more powerful main gun. The Soviets had been learning some lessons from the T-34/42, and mounted the new main gun in two to three years, and mounted the new main gun. Crew size was also increased, and a smoke discharger (to German smoke dischargers) was added as well.

design. The T-34 had sloping armor designed to incorporate it, which also allowed for a lower silhouette and protection against delivery, most other AFVs had a main armament in size; the T-34 was armed with a 76.2mm

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T34/42
Weight: 28.5
Hull Armor: 47/47/47
Turret Armor: 65/65/47
Main Gun: 76.2mm
Top Speed: 55
Crew: 4



Bigger and better: The T-34/85 replaced the T-34/43 in late 1943.

own (but then again, all early model of the turret (as opposed to the three-man turret) and rate of fire of the main armament, and

was nearly too much for the German military on the Soviet front, the biggest threats were the

the Eastern front affectionately called "half"

or other really large gun at medium or close range were not mobile at this point in the war. The T-34 was much less of a threat.)

ank or AT gun to the side or rear armor.

reason that German infantry were the best. They had to learn to kill T-34 without AT guns.

In other words, the T-34 was a dangerous opponent that was very difficult to kill. Add to this the fact that they outnumbered their foes on most occasions and you can understand why the Germans placed such a premium on tactical skill and initiative - it was their only hope.

As the war progressed, the T-34 became original faults disappeared. This, combined with becoming more experienced (and thus more general (although not ever really the equal) and dangerous foe.

roughly 64500 T-34 of one model or another of the T-34 series, the T-34/41, T-34/42,

T-34 Model 41 the original model, had a production run of roughly 1000. Of these, 1000 were with the western military districts on June 22, 1941. It was armed with a 76.2mm cannon and two 7.62mm DT MG (one bow mounted, one coaxial). It was powered by a 12 cylinder V-2 diesel engine rated at 500 HP. Armor was well sloped, with thickness varying between 20mm and 55mm. The crew consisted of four men (com-

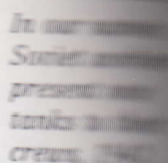
T-34
Weight: 22.0
Hull Armor: 47/60/47
Turret Armor: 90/75/60
Main Gun: 85mm
Top Speed: 55
Crew: 5



During 1941, 2996 T-34/42 were built, despite numerous factory relocations due to rapid German advances. Originally intended as a platoon commander's vehicle, but rushed into general use due to the high demand for its improved main armament. It was armed with a 76L41 cannon and two 7.62mm DT MGs (one bow mounted, one coaxial). It was powered by a 12 cylinder V-2 diesel engine rated at 500 HP. Armor was well sloped, with thickness varying between 45mm and 70mm. The crew consisted of four men (commander, driver, gunner and loader).

Roughly 9000 T-34/43 were built during 1942 (they needed them, over 6000 were lost in three battles during the summer of 1942!). This model was nearly identical to the T-34/42, the only difference being minor improvements in the transmission. It was armed with a 76L41 cannon and two 7.62mm DT MGs (one bow mounted, one coaxial). It was powered by a 12 cylinder V-2 diesel engine rated at 500 HP. Armor was well sloped, with thickness varying between 45mm and 75mm. The crew consisted of four men (commander, driver, gunner and loader).

Between 1944 and 1945, 29500 T-34/85 were built. Much like their American and British counterparts, the Soviets found their AFVs to be somewhat under-gunned by mid 1943 (this coincides with the appearance of the newer and more powerful German AFVs). Their solution was to mount a more powerful gun in the proven T-34 design. The Soviets had been learning some lessons from the Germans as well over the past two to three years, and mounted the new main armament in a new three man turret. Crew size was also increased, and a smoke discharger system (although still inferior to German smoke dischargers) was added as well. It was armed with an 85L53 M1944



KV-1 and Variants

KV-1/41
Weight: 43.5
Hull Armor: 75/60/75
Turret Armor: 75/75/75
Main Gun: 76.2mm
Top Speed: 35
Crew: 5



Between mid 1941 and mid 1942, approximately 100 of these were built. The armament consisted of a 76L41 cannon (mounted, one coaxial, one in the rear turret cupola). It had a crew of five men (commander, gunner, two machine gunners, and one machine gunner). It was powered by a V-2



In our opinion, Soviet armor present was terrible in the winter of 1942.

T MGs (one bow mounted, one coaxial, one engine rated at 520 HP. Armor was well over 90mm. The crew consisted of five men (one bow machine gunner). In fact, so successful was it that it continued in production until 1964!

converted some T-34 chassis for use as the SU-85 (mounting the same main armament, thicker armor) and the SU-100 (mounting the same AT performance as the German Tiger armor).

KV-1/41

Weight: 43.5
Hull Armor: 75/60/75
Turret Armor: 75/75/75
Main Gun: 76.2mm
Top Speed: 35
Crew: 5



proved to be a formidable foe well into and a difficult time defeating their frontal armor. The KV series were poor mobility (as the war progressed added to successive KV models in order to make subsequent versions of the KV worse cross country performance) and in spite of it had a three man turret, the layout was not ideal. While the main armaments were eventually addressed, the lack of a commander's cupola was not. By 1943, the IS (*Iosef Stalin*) series of heavy tanks, with the T-34 now being the only Soviet tank and a poor layout, the KV series also had been replaced by 1942.

and humorous side note - the KV series had transmission gears that were notoriously difficult to shift. To remedy this, KV drivers were actually issued a 'shifting hammer', called a 'shifting hammer' to 'persuade' the gearshift when it was not functioning smoothly; which was not the time.

However, the KV series was a victim of 'natural selection' among AFVs. Its massive armor and good main armament made it a viable AFV from 1941 through 1945, but as better armed, better armored, and more mobile heavy tanks became available it was no longer given priority in terms of production. The Germans, notorious for producing far too many variants, could have benefited from learning this lesson. In addition to having to compete with the newer IS series, the KV series became slowly outmoded as the Soviets shifted from the defense to the attack on a strategic level. Being very tiring to drive and not exceptionally fast or mobile, it was left behind in the AFV technological race.

Despite all this, it served well and was a very important part of the Soviet Union's armored forces from 1939-1943. During that time, and in those circumstances (desperate defensive fighting versus a tactically superior foe) it proved invaluable. Its greatest fault in the end was its inability to change enough to stay competitive in terms of firepower, protection, and mobility. This does not make it a poor tank design - many other tanks built by many other nations suffered the same fate.

Between 1939 and 1943, the Soviet Union produced roughly 6160 KV tanks. Four models of the KV series are represented in PANZER COMMANDER, the KV-1/41, KV-1/42, KV-1S and the KV-85.

Roughly 830 **KV-1/41** were built between 1939 and 1941. 508 were in service on June 22, 1941. The KV-1/41 saw its first major combat versus the Germans, but some 1/41 prototypes saw action near Summa, Finland as early as December of 1940. Armament consisted of a 76L35 cannon and three to four 7.62mm DT MG (one bow mounted, one coaxial, one in the rear turret, and occasionally one on the commander's cupola). It had a crew of five men (commander, driver, gunner, loader and bow machine gunner). It was powered by a V-2-K 12 cylinder diesel engine rated at 600 HP. It was known for having transmission and engine problems far more frequently than the T-34 series. Armor thickness varied from 40mm to 75mm, with almost no sloping. However, unlike most tanks, thickness was nearly as great on the rear and side facing as it was on the front facings. Even the top armor plates were close to 35mm thick.

KV-1S

Weight: 42.5
Hull Armor: 75/60/60
Turret Armor: 82/82/82
Main Gun: 76.2mm
Top Speed: 45
Crew: 5



Between mid 1941 and mid 1942, approximately 2000 **KV-1/42** were produced. Armament consisted of a 76L41 cannon and three to four 7.62mm DT MG (one bow mounted, one coaxial, one in the rear turret, and occasionally one on the commander's cupola). It had a crew of five men (commander, driver, gunner, loader and bow machine gunner). It was powered by a V-2-K 12 cylinder diesel engine rated at 600 HP.

KV-1/42

Weight: 47.0
Hull Armor: 110/120/90
Turret Armor: 120/120/90
Main Gun: 76.2mm
Top Speed: 28
Crew: 5



Mobility was further reduced from the effect of added appliqué armor. The armor thickness varied from 40mm to 120mm, with almost no sloping. Side armor plates were nearly as thick as front plates. Top armor plates had a thickness of 40mm in most areas.

KV-85

Weight: 46.0
Hull Armor: 75/60/60
Turret Armor: 160/110/100
Main Gun: 85mm
Top Speed: 40
Crew: 4



any sloping, gave the KV-1S far less protection than a T-34 without the same degree of mobility. The only real advance in the design of the KV-1S was a newly redesigned three man turret - one in which the commander could now be in his cupola when the main gun was in action. Armament consisted of a 76L41 cannon and three 7.62mm DT MG (one bow mounted, one coaxial, one in rear turret). It had a crew of four (commander, driver, gunner, loader and bow machine gunner). It was powered by a V-2-K 12 cylinder diesel engine rated at 600 HP. Armor thickness varied from 110mm to 85mm, with almost no sloping.

Only 130 KV-85 were produced from mid 1943 to late 1943. In attempt to counter the appearance of the 'Tiger' and 'Panther', the chassis of the KV-1S was modified to the prototypical turret of the IS-1. The IS-1 turret had a much improved layout when compared to the 'new' turret of the KV-1S. As a result, crew size was reduced to four men (commander, driver, gunner and loader) without a large drop in combat efficiency. Armament consisted of an 85L53 M1944 ZiS53/D-5T cannon and three 7.62mm DT MG (one bow mounted, one coaxial, one in the rear turret). It was powered by a V-2-K 12 cylinder diesel engine rated at 600 HP. Armor thickness varied from 30mm to 160mm, with almost no sloping on hull facings but fair sloping on the turret facings and mantlet. There were none remaining in service by January 1944 - surprising considering a production run of only 130 vehicles and the rate at which the Soviets used up tanks.

Only the KV-1S chassis was converted for use as an assault gun (and the only example of this being the SU-152). However, the IS series was based on a redesigned KV hull and chassis - so the KV series never did totally 'fade away'.

IS-2

The IS-2 was the most numerous (and arguably the best) Soviet late war heavy tank to see action. It was the predecessor of the IS-3, a tank which was the benchmark for nearly every heavy tank designed between 1945 and 1960. The IS stood for *Iosef Stalin*, the entire series being named in honor of Russia's current leader/dictator. It was basically a redesigned KV hull and chassis (with improved armor design/sloping, and a much improved suspension and transmission) with a new three man turret. The intended main armament was originally an 85mm cannon (for the IS-1, the same weapon used in the T-34/85 and KV-85), then a 100mm cannon (the same used by the SU-100), but by the time the IS-2 was ready for production a 122L43 M1943 D-25 cannon was chosen as the main armament of the IS-2. The 100mm gun had slightly

A total of 1232 KV-1S were produced between 1942 and 1943. The KV-1S was known for good mobility and cross-country performance, which is Russian for 'speedy', very thick and very well designed armor, all wrapped up into a surprisingly compact size and power. In short, it was another tank fighting in Russia.

Although a fierce opponent, did have the rate of fire of the main armament. The IS-2 had its main armament rounds stowed within the turret, which was vulnerable to high velocity armor piercing rounds with a core (penetrating). There are numerous records of kill by gunners using AP40 (nicknamed 'Arrow') and 7.5cm KwK 40 and 7.5cm KwK 40.

In mid 1944, several improvements were being routinely incorporated into the IS-2 design. The result was a variant called the IS-2M. The IS-2M was almost identical to the IS-2, with the following exceptions: the hull armor was given an even greater slope, which dramatically improved its effectiveness and a heavy machine gun was added to the commander's cupola.

This was the final version of the IS-2, more advanced IS-3. However, there are no records of combat during the Second World War in PANZER COMMANDER.

Between mid 1944 and 1945, Russia produced a tank which carried a crew of four men (commander, driver, gunner and loader) with a 122L43 M1943 D-25 cannon and three 7.62mm DT MG (one bow mounted, one coaxial, and one in the rear turret). It was powered by a V-2-K 12 cylinder diesel engine rated at 520 HP. Armor thickness was very well sloped.

ect of added applique armor plates...
with almost no sloping. Side armor...
Top armor plates had a thickness of 100mm.

A total of 1232 KV-1S were produced between 1942 and 1943. The KV-1S was known for its speed (*skorostnoy*, which is Russian for 'speed'). This model was an attempt to produce a heavy tank with greatly improved mobility. The only problem was that in order to increase the armor thickness was increased. This, combined with the fact that it was heavier than a T-34 without the same degree of protection, the KV-1S was a newly redesigned tank that could now be in his cupola with a 76L41 cannon and three 7.62mm machine guns (one in the rear turret). It had a crew of five (commander, driver, gunner, loader, and machine gunner). It was powered by a V-2 diesel engine rated at 600 HP. Armor thickness varied from 100mm to 132mm.

From 1943 to late 1943. In attempt to counter the chassis of the KV-1S was made with a turret had a much improved layout with a 76L41 cannon and three 7.62mm machine guns. As a result, crew size was reduced to four (commander, driver, gunner, and loader) without a large drop in combat effectiveness. The KV-1S was armed with a 76L41 ZiS53/D-5T cannon and three 7.62mm machine guns (one in the rear turret). It was powered by a V-2 diesel engine rated at 600 HP. Armor thickness varied from 100mm to 132mm. It was in service by January 1944 - not many vehicles and the rate at which the

assault gun (and the only example was based on a redesigned KV hull 'made away'.

the best) Soviet late war heavy tank to the tank which was the benchmark for the IS-2. The IS stood for *Iosef Stalin*, Russia's current leader/dictator. It had improved armor design/sloping and a new three man turret. The main cannon (for the IS-1, the same 100mm cannon (the same used by the KV-1S) production a 122L43 M1943 D-25 cannon. The 100mm gun had slightly

improved performance, but the 122L43 M1943 D-25 had far superior anti-perforation performance and was also easier to mass produce. Overall, the 88L71 KwK 43 was a better weapon, but no one would enjoy being engaged by a company (five vehicles) of IS-2s and their five 122mm tubes. The first time IS-2s were actually used in combat was at *Korsun Sjevenskovskij* (the 'Korsun Pocket') in February of 1944.

The IS-2 was known for good mobility and cross country performance (excellent for an IS-2's size), very thick and very well designed/sloped armor, and a very powerful main armament, all wrapped up into a surprisingly small overall silhouette for a heavy tank of its size and power. In short, it was another armored nightmare for the German forces fighting in Russia.

The IS-2, although a fierce opponent, did have three notable drawbacks. The first was the low rate of fire of the main armament. The second was the relatively low number of main armament rounds stowed within the tank itself. Its last Achilles' heel was its turret, which was vulnerable to high velocity AP rounds. German AT and AFV gunners were instructed to fire at the mantlet of all IS-1 and IS-2 with AP40 (extra high velocity armor piercing rounds with a core of tungsten or some other dense metal alloy). There are numerous records of kills versus IS-1 and IS-2 (as well as IS-3) by gunners using AP40 (nicknamed 'Arrowhead' by many gunners) fired from German PaK 40 and 7.5cm KwK 40.

By mid 1944, several improvements were being routinely incorporated into the IS-2 design. The result was a variant often called the IS-2M. The IS-2M was almost identical to the IS-2, with the following exceptions: the hull armor was given an even greater slope, which dramatically improved its effectiveness and a heavy machine gun was added to the commander's cupola.

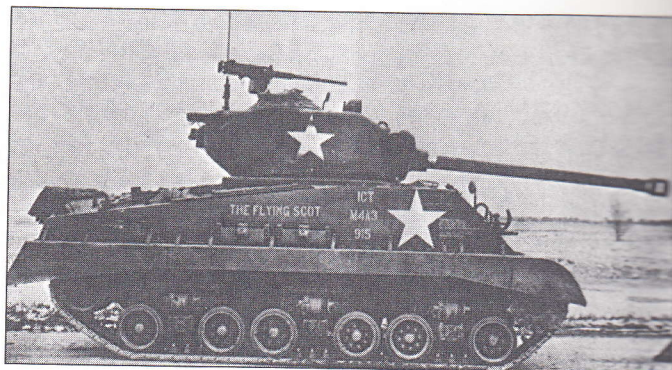
This was the final version of the IS-2, which was then followed by the even more advanced IS-3. However, there are no documented accounts of IS-3 actually seeing combat during the Second World War. The IS-2M is the variant represented in PANZER COMMANDER.

Between mid 1944 and 1945, Russia produced approximately 1500 IS-2M. The IS-2M carried a crew of four men (commander, driver, gunner and loader). It was armed with a 122L43 M1943 D-25 cannon and three 7.62mm DT MGs (one in a fixed bow mount - fired remotely, one coaxial, and one in the rear turret) and a 12.7mm M1938 DShK MG (mounted to the commander's cupola). It was powered by a V-2 IS 12 cylinder diesel engine rated at 520 HP. Armor thickness varied from 19mm to 132mm, and was very well sloped.

IS-2

Weight: 46.0
Hull Armor: 120/95/60
Turret Armor: 160/110/100
Main Gun: 122mm
Top Speed: 37
Crew: 4





Even the M4 Sherman was one of the most widely produced tanks of the war. The M4 chassis was distributed to British and other allies as a significant improvement over the Grant and Conqueror tanks, which had their 75 mm main gun mounted in the turret, whereas the Sherman had its 75 mm main gun mounted in the hull. The type most favored by the U.S. Army was the M4A3 with its 76 mm main gun.

American Vehicles

Although the United States didn't enter the war officially until 1941, American tanks often appeared in Europe, Russia and North Africa as part of the Lend-Lease program. The British, in particular, were happy to acquire American vehicles as they were generally better armed and armored than the British tanks of the time.

Initially, U.S. tank development was hampered by the then-current policy, which placed the responsibility for operating tanks and developing new tank models firmly in control of the infantry. However, developments in Europe and the success of the German Panzer divisions forced the creation of a separate American Armored Corps and the development of larger and better-armed vehicles, including the famous Sherman tank, which would be the most widely-used tank in the American and British armed forces.

Although the Sherman was a capable vehicle, American combat doctrine called for the use of special-purpose vehicles designed specifically for countering the threat of enemy tanks. This led to the development of some of the most interesting U.S. army vehicles, the M10, M36 and M18 tank destroyers. Unlike similar vehicles developed by other nations, American tank destroyers were essentially tanks in all but name. Typically they mounted full turrets with armament comparable to or better than the American tanks of the day.

Finally, the British produced a number of variants of American vehicles equipped with British weaponry, most notably the very capable 17-pound gun. These will be highlighted in the section on British vehicles.

Sherman and Variants

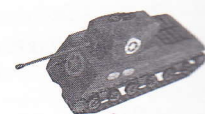
The Sherman was one of the most widely produced tanks of the war. The M4 chassis was distributed to British and other allies as a significant improvement over the Grant and Conqueror tanks, which had their 75 mm main gun mounted in the turret, whereas the Sherman had its 75 mm main gun mounted in the hull. The type most favored by the U.S. Army was the M4A3 with its 76 mm main gun.

The Sherman (named after a U.S. General from the American Civil War) was a very significant part of the "Arsenal of Democracy." While it did not excel in any one category, it was competitive, adaptable, effective, and reliable. It was designed to exploit breakthroughs. At the time of its development, U.S. Army doctrine defined its role as suppressing enemy infantry and exploiting said breakout when it was achieved. Sherman tanks were supposed to neutralize enemy AFVs.

While the M4 was a sound design, it did have its weaknesses, and compared to the German tanks of the time, it was not as well armored. It was not uncommon to see Sherman tanks with additional welded plates, sandbags or other armor. It took six Shermans to kill one Tiger tank, and the Sherman's tendency to explode spectacularly when hit in the rear by a high-velocity round was a major weakness. The U.S. Army's nickname for the M4 was "The Big Boy," and the British gave it the unflattering name for their lend-lease M4s: "The Big Boy."

M4A3/76

Weight:	31.1
Hull Armor:	50/38/38
Turret Armor:	75/50/50
Main Gun:	76mm
Top Speed:	41.8
Crew:	5



They were gradually improved with larger turret guns, the 76L51 cannon. However, this change took time, and many crews would have liked (the slow rate of change was a reality in the minds of certain generals - particularly in the case of the Sherman and Panthers in AFV vs. AFV combat). At the end of the war, only one of every four M4s was armed with the 76 mm gun. Roughly half of all M4s were armed with the 105mm howitzer for dedicated anti-infantry work.



After the war officially until 1941, American tanks were sent to North Africa as part of the Lend-Lease program. The British tanks of the time.

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of variants of American vehicles equipped with a capable 17-pound gun. These will be high-

Sherman and Variants

The Sherman was one of the most widely produced tanks of the war and saw the development of numerous variants. The M4 chassis was derived from that of the M3 Grant, an earlier design which was distributed to British and Soviet forces early in the war. The Sherman was a significant improvement over the Grant since it mounted a 75 mm cannon in the turret, whereas the Grant had its 75 mm gun mounted in the hull, limiting its effectiveness. Several U.S. companies produced the Sherman with a variety of powerplants. The type most favored by the U.S. Army was the M4A3, which had a 500HP Continental gasoline engine.

The Sherman (named after a U.S. General from the American Civil War) was a very significant part of the "Arsenal of Democracy." While it did not excel in any one category, it was competitive, adaptable, effective, and reliable. It was designed to exploit breakthroughs. At the time of its development, U.S. Army doctrine defined its role as suppressing enemy infantry during the course of a breakout, not exploiting said breakout when it was achieved. Tank destroyers and anti-tank tanks were supposed to neutralize enemy AFVs.

While the M4 was a sound design, it did have its drawbacks. It had a high silhouette for its size, and compared to the German tanks of the day, the Shermans were under armed and armored. It was not uncommon to see Sherman tanks with improvised armor, including additional welded plates, sandbags or concrete! It was widely held at the time that it took six Shermans to kill one Tiger tank. The Shermans also had a disturbing propensity to explode spectacularly when hulled, due to a combination of gasoline power and poorly designed ammunition stowage. In fact, British M4 crews had a slightly unflattering name for their lend-lease M4s — "Tommy Cookers".

M4A3

Weight: 31.1
Hull Armor: 50/38/38
Turret Armor: 75/50/50
Main Gun: 76mm
Top Speed: 41.8
Crew: 5



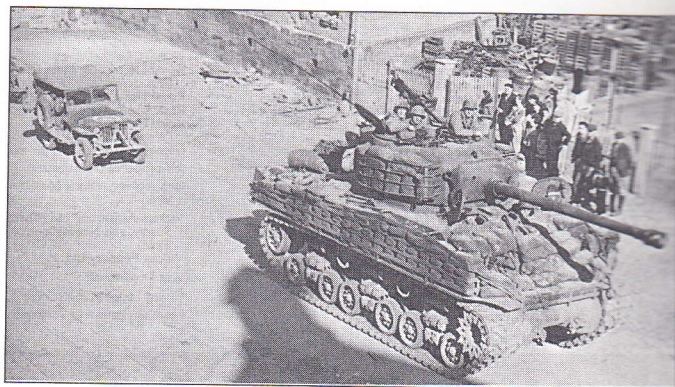
were gradually improved with larger turrets and a more powerful, higher velocity 76L51 cannon. However, this change took place at a rate slower than what U.S. AFV crews would have liked (the slow rate of change was a result of doctrine overcoming reality in the minds of certain generals — probably ones who were not facing Tigers and Panthers in AFV vs. AFV combat). At the time of the Normandy invasion, only one of every four M4s was armed with the 76L51. At the end of the Second World War, roughly half of all M4s were armed with the 76L51. Some M4s were armed with a 105mm howitzer for dedicated anti-infantry work.

M4A3

Weight: 31.1
Hull Armor: 50/38/38
Turret Armor: 75/50/50
Main Gun: 75mm
Top Speed: 41.8
Crew: 5



Like the tanks of the other major powers, the Shermans would find themselves increasingly overmatched by the advanced German tank models. By early 1944, the 75L40 was found to be ineffective versus the Panzerkampfwagen V and Panzerkampfwagen VI. In an effort to counter these advances, some Shermans



Liberalism
Allied war
anti-semitic
reign of terror
armistice
parade
disruption
French war
on their way
to Germany
1945

M4A3E8

Weight: 32.0
Hull Armor: 62/38/38
Turret Armor: 62/62/6
Main Gun: 76mm
Top Speed: 41.8
Crew: 5



As the deployment of an American heavy tank (the M26 Pershing) would not take place until 1945, a special assault version of the Sherman tank was developed which featured greatly increased armor thickness. The armor on the M4A3E2 "Jumbo" Sherman was thick enough to have a chance of withstanding hits by the 75L70 of the Panther and the 88L56 of the Tiger. Jumbos were often placed as the lead AFV in a column, as they had a good chance of surviving the initial shots of an AT ambush. However, their mobility suffered as a result of the added armor weight. These were meant for close support of infantry in the assault against Axis fortifications. Although these were manufactured with the 75 mm gun, about one in six were field-upgraded to carry the more powerful 76 mm gun.

M4A3E2

Weight: 37.0
Hull Armor: 102/76/38
Turret Armor: 152/152/152
Main Gun: 75mm
Top Speed: 35.4
Crew: 5



The Sherman tank set high standards for reliability, mobility and ruggedness, giving it a prominent place in the history of World War II combat vehicles. The Sherman, like its counterpart the Panzerkampfwagen IV, was adaptable. There are still roughly 500 M4s still on active duty to this day with the militaries

of several Nations. Their last great AFV vs. AFV Actions took place while they fought for the Israeli Army during the Arab-Israeli War. In PANZER COMMANDER five models of the Sherman are represented: the basic **M4A3 - Sherman** and its upgraded counterpart, the **M4A3/76**; the **M4A3E8 - Sherman "Easy Eight"** and an upgraded variant the **M4A3E8/76**; and the standard version of the **M4A3E2 - Sherman "Jumbo"**.

approximately 3000 M4A3 - Sherman tanks. They were armed with a 75140mm gun, one bow mounted and one in the commander's cupola). Armor varied from 14 to 25mm. The preferred engine was the V-8 gasoline engine. Crew complement on this Sherman and all other tanks was five men (commander, driver, gunner, bow and bow machine gunner) who were trained. In early 1944, as the 75mm gun became less effective versus the heavily armored German tanks, some Sherman tanks were upgraded to carry a 76mm gun, in which case they were known as the M4A3/76.

late 1944, the standard production was the M4A3E8 "Easy Eight." It had 76L51 as its main armament (although most had the other bow mounted). It's armor was a cast frontal hull and a cast turret. This was probably the best

between May and July of 1944, 254
The Jumbo saw its first combat action
of one 75mm M3 gun, and two .30 m
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as the M4A3E2/76.

W24 Chaffee

Light tanks have been a part of American combat arsenal since the beginning of tank warfare, the chief advantage being that light tanks are easier to transport and can be more rapidly deployed. The M24 Chaffee represents the pinnacle of American light tank development through World War II. Appearing in 1945, the M24 replaced the earlier M3 and served for many years after the end of the war. The 75 mm main gun gave it very good hitting power.



Approximately 3000 M4A3 - Sherman were produced between June 1942 and March 1945. They were armed with a 75L40 cannon and three machine guns (two .30 machine guns, one bow mounted and one coaxial, plus a .50 machine gun mounted on the commander's cupola). Armor varied from 38mm to 75mm in thickness, and the hull armor was riveted. The preferred engine on all models of Shermans was the 500

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M4A3E2/76

Weight: 37.0
Hull Armor: 102/76/38
Turret Armor: 152/152/152
Main Gun: 76mm
Top Speed: 35.4
Crew: 5



M4A3E8

Weight: 32.0
Hull Armor: 62/68/38
Turret Armor: 62/62/62
Main Gun: 76mm
Top Speed: 41.8
Crew: 5



munition to help reduce the fire hazard (the M26 Pershing) would not take place. The Sherman tank was developed which had armor on the M4A3E2 "Jumbo". The armor on the M4A3E2 "Jumbo" of withstanding hits by the 75L70 of the were often placed as the lead AFV during the initial shots of an AT anti-tank. The added armor weight. These were used against Axis fortifications. Although about one in six were field-upgraded

Sherman tank set high standards for ability, mobility and ruggedness, giving it a prominent place in the history of World War II combat vehicles. The Sherman, like its counterpart the Mark IV, was adaptable. There are still roughly 500 M4s still on duty to this day with the militaries. Actions took place while they fought. In PANZER COMMANDER five models of Sherman and its upgraded counter- "Easy Eight" and an upgraded variant M4A3E2 - Sherman "Jumbo".

In 1944, the standard production M4 (which also fought on in the Korean War) was the M4A3E8 "Easy Eight." It had the improved HVSS suspension, a gyro-stabilizer for its main armament (although most crews preferred not to use it), and was armed with a 76L51 as its main gun. It also had two .30 machine guns (one mounted coaxially, the other bow mounted). Its armor thickness ranged from 38mm to 62mm, and it had a cast frontal hull and a cast turret, which improved protection versus AP and HE shells. This was probably the best overall model of the M4 ever produced.

Between May and July of 1944, 254 M4A3E2 Sherman "Jumbo" were produced. The Jumbo saw its first combat action in September 1944. Its armament consisted of one 75mm M3 gun, and two .30 machine guns (one mounted coaxially, the other bow mounted). Its armor thickness ranged from 38mm to 152mm, and was well sloped. These were often field upgraded to carry a 76mm gun, in a variant known as the M4A3E2/76.

M24 Chaffee

Light tanks have been a part of the American combat arsenal since the beginning of tank warfare, the chief advantage being that light tanks are easier to transport and can be more rapidly deployed. The M24 Chaffee represents the pinnacle of American light tank development through World War II. Appearing in 1944, the M24 replaced the earlier M3 and M5 Stuart models in American tank battalions and served for many years after the war. Though lacking the armor and offensive punch of the larger American tanks, the M24 was very fast for a tank and its 75 mm gun gave it very good hitting power for a tank of its class.

M24 - Chaffee

Weight: 17.5
Hull Armor: 25/25/13
Turret Armor: 25/25/25
Main Gun: 75mm
Top Speed: 56.3
Crew: 5



Approximately 4070 **M24 Chaffee** were produced between July of 1944 and 1945. They first saw action at the Battle of the Bulge (December 1944) and were in service throughout the world until the late 70's. It was armed with a Turret-mounted aircraft gun and two .30 machine guns (one coaxial and one bow mounted). It had a Cadillac 44T24 petrol engines rated at 110hp each. It's armor thickness ranged from 10mm to 25mm, and was moderately sloped. Crew complement was usually three (commander, driver, gunner, loader and bow machine gunner).

M26 Pershing

M26 - Pershing

Weight: 41.8

Hull Armor: 102/76/51

Turret Armor: 102/76/76

Main Gun: 90mm

Top Speed: 32

Crew: 5



The M26 had its gestation in a series of experimental medium and heavy tanks which were built during the late and middle stages of the war. The appearance of more advanced German tanks, most notably the Tiger - resulted in the desire for a tank with a more powerful 90mm gun and armor capable of standing up to fire from the new German vehicles. Political differences between the Ordnance department and Army Ground Forces over the new tank design delayed the production and deployment of the M26. However, the Ardennes offensive, in which the 1st Army got pounded by German forces, highlighted the inadequacies of the Sherman tanks and cleared the way for deployment of the heavier Pershings. The Pershing arrived in Europe in early 1945, almost too late to see service; five were present at the battle for the Remagen bridge, but were thought to be too heavy to be able to safely cross the damaged bridge. The M26 was an excellent AFV, but the war was basically over before it got a chance to prove this to its opponents. Perhaps the greatest achievement of the M26 was its role as the predecessor to the M60, one of the primary US AFVs during the next 30 years, and which would continue in service with the US Army and Marine Corps through the 1980's.

Approximately 700 **M26 Pershing** were produced between November of 1944 and November of 1945. The tank was low slung, with a silhouette lower than that of the M4. It was armed with a 90mm M3 anti-aircraft gun and three machine guns (two .30, one coaxial and one bow mounted, along with a .50 on the commander's cupola). It was powered by Ford GAF V-8 petrol engine, rated at 500hp. It's armor thickness ranged from 50mm to 105mm, and was extremely well sloped. Crew complement was five men (commander, driver, gunner, loader and bow machine gunner).



British Vehicles

Despite of having invented the tank in World War I, Britain did not manage to produce tanks of sufficient caliber to counter the German threat. This resulted in the British relying on the American M3 and Sherman tanks and a whole series of British tanks and armament. Nevertheless, British tanks like the Cromwell and Churchill were produced. British tank production followed two general patterns: the cruiser tanks which were originally developed from prototype tanks designed by J. Walter Christie, whose design was rejected by the British Army; and the infantry tanks which were designed for close support in infantry operations.

Crusader Series

The British had several different classes of tank, each with its own intended duties and responsibilities. The A15 (hereafter referred to as the Crusader) was a 'Cruiser Tank'. Its job was to exploit breakthroughs, racing behind enemy lines and causing the collapse of an enemy's front by causing pandemonium in the enemy's rear areas with mobile attacks against artillery. The Crusader formed the backbone of British tank forces during the campaigns in North Africa and Italy.

When first introduced into Britain's arsenal, the Crusader was a disappointment, with its transmission and engine, which were the result of the Crusader being rushed into production without adequate testing. The Crusader first saw action - with the 6th Armoured Brigade during Operation Battleaxe (the first major British offensive in North Africa) - where more Crusaders were lost to breakdowns than to enemy action.

produced between November of 1944 and 1945, with a silhouette lower than that of the M4A1, and equipped with a 75mm main gun, two .50 caliber machine guns (two on the commander's cupola, one on the bow machine gunner's position), and a .50 caliber anti-aircraft gun. The engine, rated at 500hp. Its armor thickness was extremely well sloped. Crew complement was 10 (commander, driver, bow machine gunner, and



Weight: 19.3
Hull Armor: 40/27/30
Turret Armor: 40/30/30
Main Gun: 2pdr
Top Speed: 43.4
Crew: 5



When first introduced into Britain's arsenal, the Crusader had numerous problems with its transmission and engine, which caused frequent breakdowns. This was a result of the Crusader being rushed into active service in 1939 nearly straight from the drawing boards - not nearly enough testing time for an AFV of that era. When the Crusader first saw action - with the 6th Royal Tank Regiment of the 7th Armoured Brigade during *Operation Battleaxe* (the attempt to relieve Tobruk) in June of 1941, more Crusaders were lost to breakdowns than to enemy action.

An interesting feature on most Crusader I and a few of the early production Crusader II was a bow mounted machine gun mounted in a small 'sub turret'. Eventually this sub turret was deleted from the design. It was often removed by Crusader crews and replaced with a field adapted bow mounted machine gun. The sub turret was poorly ventilated, cramped, and worst of all - difficult to escape from in an emergency. It was a good thing when combined with a lightly armored AFV in combat.

Through 1941, its armor and main armament made it fairly competitive, however, being limited to a 6-pounder (57L52) QOF cannon for its main armament, it became obsolete with the arrival of the Panzerkampfwagen IV Ausf F2. From 1942 onward, it was already outmatched by the Panzerkampfwagen III Ausf J. The Crusader III and the Panzerkampfwagen III Ausf J had similar main armaments, but the armor protection of the Crusader III was inferior. Though the Crusader was light and had a very low silhouette, it could not keep up with the gun/armor race and eventually disappeared from the front lines of battle.

Despite all the shortcomings mentioned above, the Crusader was a capable AFV and left behind by the advance of technology. It was the mainstay of the British armored divisions until mid 1942. With the arrival of the Grant, then the Sherman and the

Cromwell, the Crusader was slowly phased out of service as a front line AFV. By late 1943, most had been replaced.

Between 1939 and 1942, Britain produced 4350 'Crusaders' (models I through III). In addition to the production figure stated, there were 1373 Crusaders built as special purpose variants - recovery vehicles, self propelled anti-aircraft vehicles, etc. **PANZER COMMANDER** uses only the first Crusader.

Approximately 1300 **Crusader I** were produced between June 1941 to May 1942. It was powered by a Nuffield Liberty 12 cylinder engine rated at 340 HP. Armament consisted of a 2-pounder (40L52) QOF ("Ordnance, Quick Firing") cannon and two 7.92mm BESA MG (one mounted coaxially, the other in a bow sub turret, as explained above). Armor thickness varied from 5mm to 40mm with decent sloping. A fair number of rivets were used in the armor construction, which led to some problems in combat. Crew complement was five men (commander, driver, gunner, loader and bow machine gunner).

Cromwell Tanks

The Cromwell was numerically the most important British-built cruiser tank of World War II, forming the main equipment of British armored divisions in 1944-45 along with the Lend-Lease Shermans. For the first time, the British Army's armored divisions had an indigenous tank that they could rely on and put faith in. The Cromwell was an attempt to address many of the inadequacies of earlier Cruiser models. Heading the list of improvements were a better engine derived from the Rolls Royce Merlin aircraft engine, more armor protection and the more powerful 6-pounder gun.

Cromwell I	
Weight:	28.0
Hull Armor:	76/51/51
Turret Armor:	76/51/51
Main Gun:	6pdr
Top Speed:	43.4
Crew:	5



the later addition of the even better Meteor engine, the Cromwell was the best and most powerful of British tank designs at the time, but the narrowness of the turret prevented its being upgunned further. Up till then the main armament gun had been required to be used in an anti-aircraft role, but experience in the desert and North Africa showed that after a breakthrough by infantry and anti-tank guns. What was needed was one that could also fire high explosives.

Although the 6-pounder was a big improvement over the previous series, it was still unable to fire a high explosive shell. British forces to divert long-range artillery in.

Considerable redesign was necessary to make the 6-pounder a powerful weapon in general, a new 75 mm

Cromwell IV	
Weight:	28.0
Hull Armor:	76/51/51
Turret Armor:	76/51/51
Main Gun:	75mm
Top Speed:	51.5
Crew:	5



outmaneuvered and outran the heavier G. The Cromwell crews relied on their superior mobility. The Cromwell are available in **PANZER COMMANDER**.

Cromwell I was the original production model. It became available for service in December 1942. The crew consisted of commander, gunner and loader in the turret, driver and bow machine gunner. It was powered by a Rolls Royce Merlin aircraft engine. Armament consisted of a 6-pounder cannon and two 7.92mm BESA machine guns (one in the turret and one in the bow). Armor thickness varied from 5mm to 40mm.

The main difference between the Cromwell I and the Cromwell IV was the engine that gave the Cromwell ample power. Between 1943 and 1945.

About 70 **Cromwell IV** tanks were produced. It consisted of a dual purpose 75mm gun and two 7.92mm BESA machine guns (one mounted coaxially and one in the bow). Its armament was strong Meteor engine powered it. Its crew complement was five men (commander, driver, gunner and bow machine gunner in the hull).

er I and a few of the early production models mounted in a small 'sub turret' (eventually removed). It was often removed by Crusader crews and mounted machine gun. The sub turret was difficult to escape from in an emergency. The heavily armored AFV in combat.

ament made it fairly competitive, however, the QF cannon for its main armament. It was the Panzerkampfwagen IV Ausf F2. The Panzerkampfwagen III Ausf J had similar main armament, but it was inferior. Though the Crusader was able to keep up with the gun/armor race in the battle.

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Hull Armor: 76/51/51
Turret Armor: 76/51/51
Main Gun: 6pdr
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the later addition of the even better Meteor engine, the Cromwell was the most and most powerful of British tank designs at the time, but the narrowness of the hull prevented its being upgunned further. Up till then the main armament gun had been required to be used in an anti-aircraft role, but experience in the desert and

North Africa showed that after a breakthrough the main targets were not tanks but German infantry and anti-tank guns. What was needed then was not an armor piercing gun but one that could also fire high explosive shells against these softer targets.

Although the 6-pounder was a big improvement over the 2-pounder employed in earlier tank series, it was still unable to fire a high explosive round, thus requiring the British forces to divert long-range artillery in support of tank operations.

Considerable redesign was necessary to remedy this situation. To provide a more powerful weapon in general, a new 75 mm gun was designed for use in British tanks which could use either AP or HE American ammunition from the Sherman tanks, and had the power to knock out a Tiger tank. The Cromwells from Mk. IV on were equipped with this gun.

After the break out from Caen, the Cromwell was able to do the job it was designed for, pursuit and exploitation of the assault. Often the Cromwell squadrons outmaneuvered and outran the heavier German tanks, but were always outgunned. The Cromwell crews relied on their superior training to overcome this. Four models of the Cromwell are available in PANZER COMMANDER, the I, III, IV and VII.

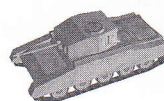
Cromwell I was the original production model. Roughly 600 tanks were made and became available for service in December 1942. Crew complement was five men (commander, gunner and loader in the turret, driver and bow machine gunner in the hull). It was powered by a Rolls Royce Merlin aircraft engine. Armament consisted of a 6-pounder cannon and two 7.92mm BESA MG (one mounted coaxially, one mounted in the bow). Armor thickness varied from 51mm to 76mm.

The main difference between the Cromwell I and the **Cromwell III** was new Meteor engine that gave the Cromwell ample power and speed. About 200 tanks were made between 1943 and 1945.

About 70 **Cromwell IV** tanks were made available November 1943. Armament consisted of a dual purpose 75mm gun that could fire both AP and HE shot, and two 7.92mm BESA machine guns (one mounted coaxially, one mounted in the bow). The strong Meteor engine powered it. Its armor ranged from 51mm to 76mm in thickness. Crew complement was five men (commander, gunner and loader in the turret, driver and bow machine gunner in the hull).

Cromwell III

Weight: 28.0
Hull Armor: 76/51/51
Turret Armor: 76/51/51
Main Gun: 6pdr
Top Speed: 51.5
Crew: 5

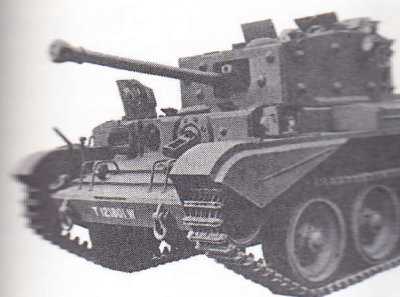


About 1500 **Cromwell VII** tanks were produced from June 1944 to June 1945. It was a reworked Cromwell IV. Main armament was the same dual purpose 75mm gun, and two 7.92mm BESA machine guns (one mounted coaxially, one mounted in the bow). The Meteor engine also powered the **Cromwell VII**,

and it had wider tracks, a stronger suspension and a geared down drive to increase period between major services. Its armor was strengthened with applique plates welded on the hull front, thickness ranging from 50mm to 105mm. Crew complement was five men (commander, gunner and loader in the turret, driver and bow machine gunner in the hull).

Cromwell VII

Weight: 28.5
Hull Armor: 101/56/51
Turret Armor: 101/56/51
Main Gun: 75mm
Top Speed: 48
Crew: 5



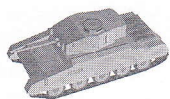
A34 Comet

The British had an excellent anti-tank weapon in its 17-pounder, but production problems delayed its appearance in a British tank until the Comet appeared early in 1945, almost too late to participate in combat in the European theater. Nonetheless, the Comet was the first British tank that could approach the German Panther in terms of performance and firepower and is noteworthy for that reason.

The A34 Comet was the last of the Cruiser Tank series and was originally seen as being an improved Cromwell but ended up an almost total redesign. To avoid the need of widening the hull, as had been necessary with the A30 Challenger to take the 17-pounder gun, the British designed a new "compact" version of the 17-pounder with a shorter barrel, shorter breech, and lighter weight. This 77mm gun had a performance and penetrating power only slightly inferior to the 17 pounder gun and fired the same ammunition. The Comet proved a fast and reliable tank, the first British AFV to come near matching the German Panther in performance and gun power.

Comet

Weight: 35.8
Hull Armor: 101/50/50
Turret Armor: 101/50/50
Main Gun: 77mm
Top Speed: 46.7
Crew: 5



Approximately 1200 **Comets** were built between September 1944 to May 1945, and some stayed in British Army service until 1958, while tanks sold to other users were still going strong two decades later. The Comet did not enter combat until after crossing the Rhine in March 1945, though a few vehicles were issued earlier in December 1944. It was powered by a

Rolls-Royce Meteor V12 engine rated at 600hp. Armament consisted of a 77mm gun and two 7.92mm BESA machine guns (one mounted coaxially, the other in the bow). Armor thickness varied from 50mm to 105mm. Crew complement was five men (commander, driver, gunner, loader and bow machine gunner).

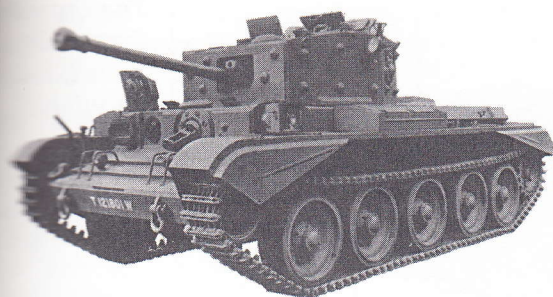
Matilda II Infantry Tank

The British conceived the role of infantry tank as a slow, maneuverable cruiser tank. These vehicles would be heavily armored and suitable for supporting the infantry. The Matilda I, the original British infantry tank, was one of the best German tanks of the war, but its lack of an anti-tank weapon limited its tactical

Thus, the British returned to the drawing board and developed the Matilda II, a much larger tank that mounted the 2-pounder gun. Its lack of speed, inability to be upgunned, and the lethality of the 88mm gun eventually caused its demise, but despite its shortcomings, the Matilda II played an important role in the war in North Africa. It first saw action in June 1940, and was in that campaign, being dubbed "Queen of the Desert" for its long range. Worse, the Matilda II could not be upgunned, and its importance declined and after 1942 it was the only British tank left in the war. The Matilda II is represented

Between December 1937 and August 1940, the Matilda II was powered by a twin AEC engines rated at 100hp. It carried a 2-pounder gun and one 7.92mm BESA machine gun. Its armor thickness varied from 50mm to 80mm; its turret was virtually indestructible to all but the German 88mm gun. The crew consisted of five men (commander, driver, gunner and loader).

Cromwell VII
 Weight: 28.5
 Hull Armor: 101/56/51
 Turret Armor: 101/56/51
 Main Gun: 75mm
 Top Speed: 48
 Crew: 5



*The Cromwell:
 The most
 numerous
 tank in British
 service, 1944.*

ension and a geared down drive to protect the
 was strengthened with applique plates over
 from 50mm to 105mm. Crew complement was
 in the turret, driver and bow machine gunner.

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 mander, driver, gunner and loader).

Matilda II Infantry Tank

The British conceived the role of infantry tank as being distinct from that of the more maneuverable cruiser tanks. These vehicles would need to go no faster than walking pace, would be heavily armored and suitably armed for an infantry support role. The Matilda I, the original British infantry tank, mounted only machine guns but was capable of surviving under fire of the best German tanks of the day. Unfortunately the lack of an anti-tank weapon limited its tactical usefulness.

Thus, the British returned to the drawing board and developed the Matilda II, a much larger tank that mounted the 2-pounder gun. Its lack of speed, inability to be upgunned, and the lethality of the 88 eventually caused its demise, but despite its shortcomings, the Matilda II played an important role in the war in North Africa.

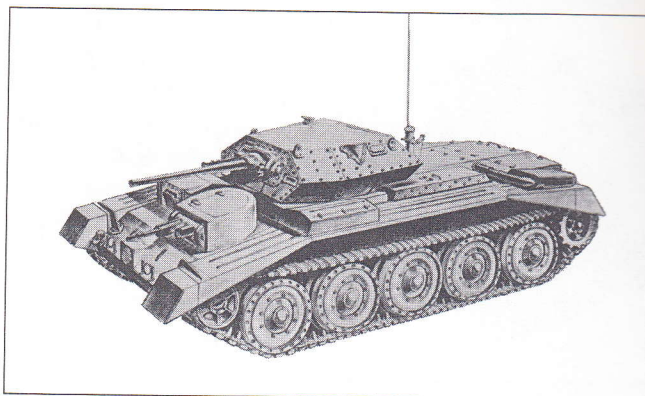
It first saw action in June 1940, and was more than equal to the Italian tanks it faced in that campaign, being dubbed "Queen of the Battlefield." Unfortunately, the Germans arrived with their 88 mm Flak guns, which could easily defeat the Matilda's armor at long range. Worse, the Matilda II could not mount the larger British tank guns, so its importance declined and after 1942 it was used only in secondary roles. However, the Matilda can claim to be the only British tank that served and fought throughout World War II. The **Matilda II** is represented in PANZER COMMANDER.

Between December 1937 and August 1943 2987 **Matilda II** were produced. It was powered by a twin AEC engines rated at 87hp each. Armament consisted of a 2-pounder gun and one 7.92mm BESA machine gun (mounted coaxially). Armor thickness varied from 50mm to 80mm; its thick hide and well protected tracks made it virtually indestructible to all but the German FlaK 88. Crew complement was four men (commander, driver, gunner and loader).

Matilda Mk. II

Weight: 27.0
 Hull Armor: 75/70/55
 Turret Armor: 78/57/57
 Main Gun: 2pdr
 Top Speed: 22
 Crew: 4





*The Valentine
fast, well-
armed, but
unreliable.*

Valentine Infantry Tank

The name Valentine derived from the date when the design was submitted to the British War Office, 14 February 1938. The Valentine began service in late 1940 and was actually used in the cruiser tank role due to the shortage of cruiser tanks available then. The Valentine had some of the same shortcomings as the Matilda – mainly low speed and an under-powered gun. It had one advantage over the Matilda, however, in that it could accommodate a larger turret and, hence, could be up-gunned to use the 6-pounder, thus ensuring a longer life span. The main drawback to the Valentine was that space inside the turret was restricted, allowing only a three man crew. The British 8th Army's employment of a few Valentine IX in March 1943 Tunisia was apparently their only use in action by the British. Almost half of the Valentine and its variants were sent to the Soviet Union. The **Valentine IX** is the model represented in Panzer Commander.

Valentine Mk. IX
Weight: 18.6
Hull Armor: 65/43/43
Turret Armor: 65/43/43
Main Gun: 6pdr
Top Speed: 24.1
Crew: 3



Approximately 630 **Valentine IX** were made. Its main gun was a 6-pounder, it had no machine gun. It was powered by a GMC diesel engine. Armor thickness ranged from 43mm to 65mm, and sloping was moderate. Crew was three men (commander-loader and gunner in the turret and driver in the hull).

Churchill Infantry Tank

The A22 (hereafter referred to as the Churchill) was an 'Infantry Tank' – its job was to travel with infantry and provide direct fire support to them. Mobility was not really a requirement (in fact, the prototype was only required to have a maximum cross-country speed of 17 KPH). Heavy armor protection and a main armament with good anti-tank and anti-personnel capabilities were requirements. It would be nearly three years of hard development and redesign before the requirements were fully met, but in the end the Churchill has been regarded by many as one of the great AFVs of the Second World War. By 1943, the British had determined that their two class tank system ("cruiser" tanks - stressing speed over armor in their designs and used as cavalry was

in the past, and "infantry" tanks - stressing armor and help achieve breakthroughs). The A27 ('Cromwell'), effectively a 'cruiser' tank, appeared to reaching the front in Tunisia, the Germans retreated into the rugged and steep terrain of the Tunisian hills. The Churchill got a second chance, and that was all it needed. From the hills of Tunisia to the mountain passes of Italy to the marshes of the Netherlands to the dark and wet forests of Germany itself, the Churchill marked its place on the list of the most famous and effective AFVs of all time. When no tank man, the Churchill was there alongside anything the enemy could throw at it and engage strongpoints or enemy armor. It killed German 88mm gun batteries and live tanks by the British.

Due to its awesome armor protection, many were converted for use as engineer vehicles (these being called 'Crocodiles') seeing action as late as the Korean War and service with the Irish army as late as 1991.

Between 1941 and 1945, Britain produced the Churchill IV is the model represented in Panzer Commander.

Starting in mid 1942, 1622 Churchill tanks were built, designed to be an improvement from earlier models, designed to be a new turret gave slightly inferior armor to keep up in the gun/armor race. Commander, gunner, loader and bow machine gunner. A 6-cylinder engine rated at 350 HP. Armament consisted of a 6-pounder main gun, a 7.92mm BESA MG (on top) and two 7.92mm BESA MG (on the sides). Armor thickness varied from 75mm to 100mm. Its protection was extremely good on all facing.

Sherman VC 'Firefly'

When no other British built tank seen in the field (flying British colors) would carry the British flag to the Normandy landings. There were no other British tanks that proved that only a small amount of armor was possible. At this point, there was no other British tank by June of 1944 there was an Sherman in British armored units.



The Crusader
just, well-
armed, but
unreliable.

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Valentine Mk. IX

Weight: 18.6
Armor: 65/43/43
Turret Armor: 65/43/43
Main Gun: 6pdr
Top Speed: 24.1
Crew: 3



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cept. The A27 ('Cromwell', effectively a 'heavy cruiser' tank) was becoming available
and the Churchill appeared to reaching the end of its operational life.

But in Tunisia, the Germans retreated into
the rugged and steep terrain of the
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Germany itself, the Churchill marked its
place on the list of the most famous and

effective AFVs of all time. When no tank could be mobile due to limits imposed by ter-
rain, the Churchill was there alongside the infantry. It was tough enough to take almost
anything the enemy could throw at it and armed with a dual purpose gun that could
engage strongpoints or enemy armor. It was one of the first tanks ever able to engage
German 88mm gun batteries and live to tell about it; Churchills killed the first "Tiger"
killed by the British.

Due to its awesome armor protection and spacious interior, a number of Churchills
were converted for use as engineer vehicles, bridgelayer vehicles, and flamethrower
vehicles (these being called 'Crocodiles'). There are accounts of Churchill Crocodiles
seeing action as late as the Korean war, and Churchill engineering vehicles were in
service with the Irish army as late as 1970.

Between 1941 and 1945, Britain produced 5640 'Churchills' of one type or another.
The Churchill IV is the model represented in PANZER COMMANDER.

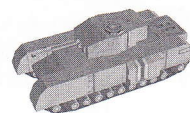
Starting in mid 1942, 1622 **Churchill IV** were built. It had a cast armor turret, differ-
ent from earlier models, designed to carry a new 6-pounder (57L52) OQF cannon. This
new turret gave slightly inferior armor protection, but it was seen as a necessary evil
to keep up in the gun/armor race. Crew complement was five men (commander, dri-
ver, gunner, loader and bow machine gunner). It was powered by a Bedford 21 liter 12
cylinder engine rated at 350 HP. Armament consisted of a 6-pounder (57L52) OQF can-
non and two 7.92mm BESA MG (one mounted coaxially, one mounted in the bow).
Armor thickness varied from 75mm to 130mm with almost no sloping. Armor protec-
tion was extremely good on all facings.

Sherman VC 'Firefly'.

When no other British built tank seemed capable, it was decided that the M4 Sherman
(flying British colors) would carry the 17-pounder (76.2L58) cannon during and after
the Normandy landings. There were many doubters of this conversion, but a prototype
proved that only a small amount of change to the M4 Sherman was needed to make
this possible. At this point, there was a great emphasis placed on conversion, so that
by June of 1944 there was an average of one 'Firefly' per troop (platoon) of M4
Shermans in British armored units.

Churchill IV

Weight: 39.7
Hull Armor: 102/74/70
Turret Armor: 102/74/70
Main Gun: 6pdr
Top Speed: 24.9
Crew: 5



This was crucial. With the 17 pounder (76.2L58) the British now had a tank with a main armament that was superior to that of most German AFVs, and only slightly inferior to the weaponry of the Panzerkampfwagen V. It was primarily given the duty of 'overwatch' - staying hidden in cover and covering advancing British tanks with less powerful weapons as a main armament against attacking German Panzerkampfwagen V and Panzerkampfwagen VI. German Panzer crews had a healthy respect for the 17 pounder (76.2L58) armed Shermans - in Normandy they had orders to engage Fireflies first in any engagement.

It is a common myth that German Panzer 'ace' Michael Wittmann died fighting a platoon of Fireflies'. In fact, his vehicle (along with himself and his crew) were killed when an aerial bomb scored a direct hit on the engine compartment of their Panzerkampfwagen VI Ausf E. The resulting fire detonated both the AFV's fuel and ammunition.

Between 1944 and 1945, Britain produced roughly 600 'Fireflies.' The 'C' designation for British AFVs represented a 17-pounder (76.2L58) main armament. The most common version of the Firefly was the VC (a converted Sherman V). It had armor ranging in thickness from 35mm to 80mm and was well sloped. Crew complement was four men (commander, driver, gunner and loader).

M4A4 - Sherman V

Weight: 32.2
Hull Armor: 50/38/38
Turret Armor: 75/50/50
Main Gun: 75mm
Top Speed: 40.0
Crew: 5



In addition to converting the Sherman V, these Lend-Lease AFVs were also used as is by British Forces. The United States sent Britain 7,167 of the 7,499 M4A4 produced (redesignated **Sherman V** by the British) which they became available in July of 1943. The Sherman V were actually inferior versions of their M4A3 cousins. While their armor was identical, with thicknesses ranging from 35mm to 40mm, the engine was inferior, resulting in a slower vehicle. In addition the turret was changed adding weight and it carried only a 75mm gun. With these disadvantages, it's no surprise that the British chose to upgrade some of their Sherman V to Fireflies!

Firefly

Weight: 34.0
Hull Armor: 51/38/38
Turret Armor: 76/51/51
Main Gun: 17pdr
Top Speed: 40.0
Crew: 4



■ DESCRIPTIONS OF ENEMY ORDN

This section is a catch-all, describing the capabilities of enemy ordnance that are not able to control, such as tank destroyers. The following information is given for each vehicle as follows:

Name of the Ordnance

Hull Armor: (front/side/rear)
Turret Armor: (front/side/rear)
Main Gun: (ordnance type)
Top Speed: (in kilometers per hour)

German Mobile Ordnance

StuG IIIB

Hull Armor: 50/30/30
Turret Armor: -
Main Gun: 75mm
Top Speed: 40



The Sturmgeschuetz was built on a PzIII chassis to produce more than turreted tanks, and the StuG IIIB was used in assault gun and tank roles.

StuG IIIG

Hull Armor: 50/30/30
Turret Armor: -
Main Gun: 75mm
Top Speed: 40



The StuGIIIG was almost identical to the StuG IIIB. Although it was the same size, it had a more penetrating capability.

Firefly

Weight: 34.0
Hull Armor: 51/38/38
Turret Armor: 75/51/51
Main Gun: 17pdr
Top Speed: 40.0
Crew: 4

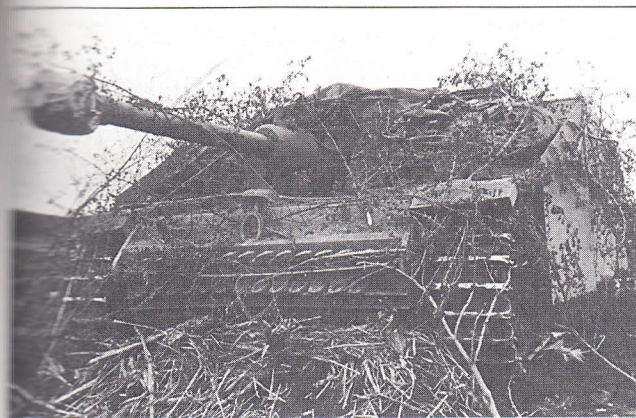


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*The Last Line:
A camouflaged
assault gun
waits for
the Allies,
Germany,
1945.*

■ DESCRIPTIONS OF ENEMY ORDNANCE

This section is a catch-all, describing the capabilities and uses of enemy ordnance you are not able to control, such as tank destroyers and gun emplacements. Statistics are given for each vehicle as follows:

Name of the Ordnance

Hull Armor: (front/side/rear)
Turret Armor: (front/side/rear)
Main Gun: (ordnance type)
Top Speed: (in kilometers per hour)

German Mobile Ordnance

StuG IIIB

Hull Armor: 50/30/30
Turret Armor: -
Main Gun: 75mm
Top Speed: 40



The Sturmgeschuetz was built on a PzIII chassis. The StuG III was cheaper and quicker to produce than turreted tanks, and their low height was helpful in ambushes. The StuG IIIB was used in assault gun and tank destroyer units.

StuG IIIG

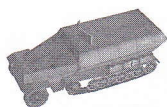
Hull Armor: 50/30/30
Turret Armor: -
Main Gun: 75mm
Top Speed: 40



The StuGIIIG was almost identical to the StuGIIIB, however its gun was superior. Although it was the same size, it had a longer barrel that gave its shells increased penetrating capability.

251/1 Halftrack

Hull Armor: 15/8/8
 Turret Armor: 10/8/8
 Main Gun: 7.92mm
 Top Speed: 50



An armored semi-tracked vehicle, the 251/1 was designed as a troop carrier for Panzer Divisions capable of accompanying tanks into battle.

SdKfz 231

Hull Armor: 15/8/8
 Turret Armor: 8/8/8
 Main Gun: 20mm
 Top Speed: 85



The Sonderkraftfahrzeuge 'Special Vehicle' 231 was an 8-wheeled armored car used as a reconnaissance vehicle with good cross-country mobility.

SdKfz 234/1

Hull Armor: 15/8/8
 Turret Armor: 16/8/8
 Main Gun: 20mm
 Top Speed: 85



The Sonderkraftfahrzeuge 'Special Vehicle' 234/1 was also an 8-wheeled armored reconnaissance vehicle. It was an improvement over the earlier 231, with a better suspension improved off road performance, more space for ammunition and a more heavily armored turret armor.

Opel Blitz Truck

Hull Armor: 2/2/2
 Turret Armor: —
 Main Gun: —
 Top Speed: 77.2



The main truck used by the German Army to move its troops and supplies by road

Marder

Hull Armor: 35/15/15
 Turret Armor: 30/10/10
 Main Gun: 75mm
 Top Speed: 40



The Marder was a stopgap self-propelled anti-tank gun on a tank chassis made necessary by the Germans inability to stop the Soviet T-34 and KV tanks. Used mainly with Panzerjaeger (tank-hunter) detachments.

Jagdpanther

Hull Armor: 45
 Turret Armor: 60/40/40
 Main Gun: 88mm
 Top Speed: 45



The Jagdpanther was a heavy tank destroyer and the deadliest. The Jagdpanther was issued for destroying.

Hetzer

Hull Armor: 60/20/20
 Turret Armor: 60/20/8
 Main Gun: 75mm
 Top Speed: 40



The Hetzer was a mobile anti-tank gun to replace the earlier Marders. The Hetzer was a compact silhouette and the well-sloped

Soviet Mobile Ordnance**BA-10**

Hull Armor: 16/6/6
 Turret Armor: 6/6/6
 Main Gun: 45mm
 Top Speed: 80



The BA-10 was an armored car with a turret became the standard equipment of reconnaissance armored brigades.

Truck

Hull Armor: 2/2/2
 Turret Armor: —
 Main Gun: —
 Top Speed: 77.2



Lend-Lease truck that had better off-road performance than the main trucks used by the Red Army to transport supplies. Locals thought the "USA" stenciled on the side translated to "kill that @!*&#!@*% A

Jagdpanther

Weight: 45.5
 Hull Armor: 60/40/40
 Turret Armor: 80/50/40
 Main Gun: 88mm
 Top Speed: 46



The Jagdpanther was a heavy tank destroyer, and with its gun, armor, and speed, one of the deadliest. The Jagdpanther was issued to special units whose sole job was tank destroying.

Hetzer

Hull Armor: 60/20/20
 Turret Armor: 60/20/8
 Main Gun: 75mm
 Top Speed: 40



The Hetzer was a mobile anti-tank gun on a PzKpfw38(t) chassis and was used to replace the earlier Marders. The Hetzer was a very well-designed vehicle, it had a low and compact silhouette and the well-sloped armor provided good protection.

Soviet Mobile Ordnance**BA-10**

Hull Armor: 16/6/6
 Turret Armor: 6/6/6
 Main Gun: 45mm
 Top Speed: 80



The BA-10 was an armored car with a light tank turret mounted on top. The BA-10 became the standard equipment of reconnaissance units as well as independent armored brigades.

Truck

Hull Armor: 2/2/2
 Turret Armor: —
 Main Gun: —
 Top Speed: 77.2



Lend-Lease truck that had better off-road mobility than Soviet made trucks. One of the main trucks used by the Red Army to move its troops and supplies by road. Many locals thought the "USA" stenciled on the truck stood for "Ubiyat Sukinsyna Adolfa", translated to "kill that @!*#?&#!@*% Adolf."

ank gun on a tank chassis made nec-
 T-34 and KV tanks. Used mainly with



*Mission:
Accomplished:
Soviet assault
guns in
Berlin, 1945*

SU - 85

Hull Armor: 45/45/45
Turret Armor: —
Main Gun: 85mm
Top Speed: 47



With the deployment by Germany of the new Panther and Tiger tanks, much haste was made by Soviet designers to produce a countermeasure. The designers were given the task of producing a self-propelled gun possessing high mobility, excellent armor-piercing capabilities, high rate of fire, and satisfying the requirements for rapid production. The SU-85 was this vehicle.

SU - 100

Hull Armor: 75/45/45
Turret Armor: —
Main Gun: 100mm
Top Speed: 48



With the application of the 85mm gun to the T-34, it became necessary to increase the firepower of the self-propelled guns. The Soviets started to replace the SU-85 with the SU-100. The SU-100 proved to be an effective means of destroying German heavy tanks and tank destroyers - such as the Panther, Tiger, and Jagdpanther.

American Mobile Ordnance**M8 - Greyhound**

Hull Armor: 16/10/10
Turret Armor: 19/19/19
Main Gun: 37mm
Top Speed: 88.4



The M8 was designed as a light, highly mobile, armored reconnaissance car.

M36 - Jackson

Hull Armor: 38/19/19
Turret Armor: 75/32/102
Main Gun: 90mm
Top Speed: 48.3



The M36 was designed to provide a more powerful tank destroyer. The main advantage was that it could fire twice as fast as the 17-pounder.

M42 - Halftrack

Hull Armor: 6/6/6
Turret Armor: —
Main Gun: —
Top Speed: 64.3



An armored semi-tracked vehicle, the M42 was used as a machine gun carrier.

M18 - Hellcat

Hull Armor: 13/13/13
Turret Armor: 19/13/13
Main Gun: 76mm
Top Speed: 80.4



Incorporating the experience gained in the design of the M36, the M18 was designed to the principle of 'Shoot and move'. The open turret obtained excellent armor protection. The M18 was the fastest tracked vehicle of the war.

M16 - Halftrack

Hull Armor: 6/6/6
Turret Armor: 6/6/1
Main Gun: Quad .50cal
Top Speed: 72.4



An armored semi-tracked vehicle, the M16 was used as a machine gun carrier.

M10 - Wolverine

Hull Armor: 37/19/13
Turret Armor: 63/25/25
Main Gun: 3 inch
Top Speed: 48.3



A 3-inch gun mounted on a M4 chassis. It embodied the best of both worlds. The main disadvantage was an open turret vulnerable to shell splinters and aircraft.



*Mission:
Accomplishment:
Soviet assault
guns in
Berlin, 1945*

another and Tiger tanks, much haste was
measure. The designers were given the
ing high mobility, excellent armor-piercing
the requirements for rapid production.

4, it became necessary to increase the
started to replace the SU-85 with the
means of destroying German heavy
Tiger, and Jagdpanther.

armored reconnaissance car.

M36 - Jackson

Hull Armor: 38/19/19
Turret Armor: 75/32/102
Main Gun: 90mm
Top Speed: 48.3



The M36 was designed to provide a more powerful self-propelled anti-tank gun than the M10 tank destroyer. The main advantage that the 90mm gun had over the 17-pounder was that it could fire twice as fast even though it could not penetrate as much armor as the 17-pounder.

M2 - Halftrack

Hull Armor: 6/6/6
Turret Armor: -
Main Gun: -
Top Speed: 64.3



An armored semi-tracked vehicle, the M2's primary function was as a reconnaissance vehicle and a machine gun carrier.

M18 - Hellcat

Hull Armor: 13/13/13
Turret Armor: 19/13/13
Main Gun: 76mm
Top Speed: 80.4



Incorporating the experience gained thus far, the M18 was a new tank destroyer designed to the principle of 'Shoot and Scoot', highly mobile, low-silhouette, and lightly armored. The open turret obtained better vision but at the expense of protection. It was the fastest tracked vehicle of the war.

M16 - Halftrack

Hull Armor: 6/6/6
Turret Armor: 6/6/1
Main Gun: Quad .50cal
Top Speed: 72.4



An armored semi-tracked vehicle, the M16 was a halftrack with quad .50 caliber machine guns mounted in the passenger area.

M10 - Wolverine

Hull Armor: 37/19/13
Turret Armor: 63/25/25
Main Gun: 3 inch
Top Speed: 48.3



A 3-inch gun mounted on a M4 tank chassis was designed for use against tanks and armored vehicles. It embodied heavy firepower, excellent mobility, and sloping armor. The main disadvantage was an open-topped turret which left the crew vulnerable to shell splinters and aircraft.

Truck

Hull Armor: 2/2/2
 Turret Armor: —
 Main Gun: —
 Top Speed: 77.2



General Motors Corporation made this 4x4 truck used to move personnel and cargo.

British Mobile Ordnance**Daimler Armored Car**

Hull Armor: 16/8/8
 Turret Armor: 16/8/8
 Main Gun: 2pdr
 Top Speed: 80



An armored scout car with a tank turret mounted on top that enabled the Daimler to look after itself on the battlefield.

Truck

Hull Armor: 2/2/2
 Turret Armor: —
 Main Gun: —
 Top Speed: 77.2



The Lend-Lease agreement sent many of these General Motors 4x4 trucks to Britain, where they were used to move personnel and cargo.

Sexton

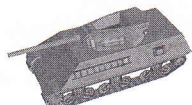
Hull Armor: 40/35/35
 Turret Armor: 27/18/18
 Main Gun: 25pdr
 Top Speed: 40.2



The Sexton was a self-propelled artillery gun designed and made in Canada to use the standard British 25pdr artillery gun.

Achilles

Hull Armor: 37/25/25
 Turret Armor: 63/25/25
 Main Gun: 17pdr
 Top Speed: 48.3



In British service the M10 tank destroyer armament was replaced by a 17pdr gun.

Bren Carrier

Hull Armor: 12/12/12
 Turret Armor: 12/12/12
 Main Gun: Light Machine Gun
 Top Speed: 51



The Bren Carrier was a Universal Carrier, an armored tracked vehicle, the primary form of mechanized infantry transport.

French and Polish Mobile Ordnance**Renault R-35**

Hull Armor: 25/20/25
 Turret Armor: 45/45/45
 Main Gun: 37mm
 Top Speed: 20



An early war light infantry support tank. When war was declared this was the only French tank. It was also exported to the Poles.

Hotchkiss H-39

Hull Armor: 40/40/40
 Turret Armor: 40/40/40
 Main Gun: 37mm
 Top Speed: 36



A light tank adopted by the French. It was comparable to anything the Germans had at the time.

Truck

Hull Armor: 2/2/2
 Turret Armor: —
 Main Gun: —
 Top Speed: 77.2



The French and the Poles had their own versions of the truck.

Bren Carrier

Hull Armor: 12/12/12
Turret Armor: 12/12/12
Main Gun: Light Machine Gun
Top Speed: 51



The Bren Carrier was a Universal Carrier mounting a Bren light machine gun. An armored tracked vehicle, the primary function was as a troop carrier.

French and Polish Mobile Ordnance

Renault R-35

Hull Armor: 25/20/25
Turret Armor: 45/45/45
Main Gun: 37mm
Top Speed: 20



An early war light infantry support tank adequately armored and armed - but too slow. When war was declared this was the most numerous of all the French tanks. These tanks were also exported to the Poles at the start of the war.

Hotchkiss H-39

Hull Armor: 40/40/40
Turret Armor: 40/40/40
Main Gun: 37mm
Top Speed: 36



A light tank adopted by the French cavalry. With an upgraded 37mm gun, the H-39 was comparable to anything the Germans had at the time.

Truck

Hull Armor: 2/2/2
Turret Armor:
Main Gun:
Top Speed: 77.2



The French and the Poles had their own 4x4 trucks used to move personnel and cargo.

Stationary Gun Emplacements

Other than tanks and other mobile enemy units, in PANZER COMMANDER you can also face dug in infantry units, wielding a variety of ordnance. All gun emplacements are housed in one of three types of bunkers: the standard square concrete bunker; a hexagonal concrete bunker, which allows for a greater range of fire; or the more vulnerable sandbag bunker. The firepower coming from these bunkers varies from nation to nation, but comes in one of three basic categories, machine guns, rockets and anti-tank guns. Although it is difficult to tell what a bunker is shielding by sight, pay attention to your information bar: a message appears there when the bunker has been identified by your men.



Machine Guns

Machine gun emplacements are common, and every country has them, housed in one of the three kinds of bunkers. While generally ineffectual against your tank's armor, the noise from their attack can be annoying and distracting. Also, although machine guns may not be immediately dangerous, with repeated fire it is *possible* for them to damage parts of your tank such as the treads or the main gun. Tanks are often called upon to clear out machine gun nests, because of their near invulnerability; infantry and other vehicles you may be escorting can be destroyed by an overlooked emplacement.

Rockets

World War II also saw the development of anti-tank rockets, like the American "bazooka" and the more powerful German Panzerfaust. These fired short range, unguided missiles—really little more than grenades—carried a high-temperature explosive designed to melt through tank armor. Their limited range and accuracy made their use an act of great bravado. However, while their effectiveness generally is greatly diminished with distance, their weapons can wreak havoc at greater distances on poorly armored tanks, and other vehicles which you may be escorting. In PANZER COMMANDER only the Germans and the Americans generally possess infantry emplacements armed with rockets.

Anti-Tank Guns

Tanks were such formidable weapons that all combatants in World War II put a great deal of emphasis on dealing with this threat. While it was common for each side to counter with tanks of its own, this was not always practical or appropriate, depending on the tactical situation. Defensive positions in particular were well suited for arming with less-mobile weapons, freeing tanks for those situations where their mobility could be used effectively.



The primary anti-tank weapons were rounds—not unlike the main armor-piercing rounds—and anti-tank guns were designed to destroy armor. Anti-tank guns were designed to respond to an immediate threat.

Like their motorized counterparts, anti-tank guns can pose a serious threat, though an experienced gun crew can respond to an immediate threat.

German Anti-tank Guns

Throughout the war the Germans developed guns of increasing size. These had the Germans—especially in France and Soviet tanks made life difficult.

PaK 38

A common early-war German anti-tank gun. This was a similar weapon to the PaK 39, but somewhat more powerful.

PaK 39

Another towed weapon which was common in the latter part of the war. This was a similar weapon to the PaK 38, but employed in the Panzer IV. The chassis to form the Hetzer tank destroyer.

Flak 88

Originally designed as an anti-aircraft gun, the feared "eighty-eight" made its name as an anti-tank weapon. It served increasingly throughout the war in an armored vehicle, the Jagdpanther tank destroyers.



and anti-tank guns. Although it is difficult to pay attention to your information has been identified by your men.

Every country has them, housed in one or more bunkers. Although machine guns are effective against your tank's armor, the machine gun is possible for them to damage your tank. Tanks are often called upon to provide invulnerability; infantry and other units are an overlooked emplacement.

Anti-tank rockets, like the American Panzerfaust. These fired short range, high-temperature rounds—carried a high-temperature warhead. Their limited range and accuracy while their effectiveness generally is to wreak havoc at greater distances than you may be escorting. In PANZER, anti-tank guns generally possess infantry emplacement.

Infantry in World War II put a great deal of effort into it was common for each side to use anti-tank or appropriate, depending on the situation were well suited for arming situations where their mobility could



Long arm of the Wehrmacht: The crew of an "88" scan the horizon for targets.

The primary anti-tank weapons were towed cannons which fired armor-piercing rounds—not unlike the main armament of most tanks. In fact, often tank main guns and anti-tank guns were designed around the same mechanisms and fired the same ammunition. Anti-tank guns were commonly employed in defensive emplacements, though an experienced gun crew could deploy one quickly enough in the field to respond to an immediate threat.

Like their motorized counterparts, anti-tank gun emplacements are capable of destroying your vehicle from a distance. Protected by the walls of their bunkers, these guns can pose a serious threat, that is best avoided when possible. The capabilities of anti-tank guns in PANZER COMMANDER are listed below by country.

German Anti-tank Guns

Throughout the war the Germans equipped their troops with a variety of anti-tank guns of increasing size. These had a significant impact on the early war successes of the Germans—especially in France and the Eastern Front, where the thicker armor of French and Soviet tanks made life difficult for the German Panzers.

PaK 38

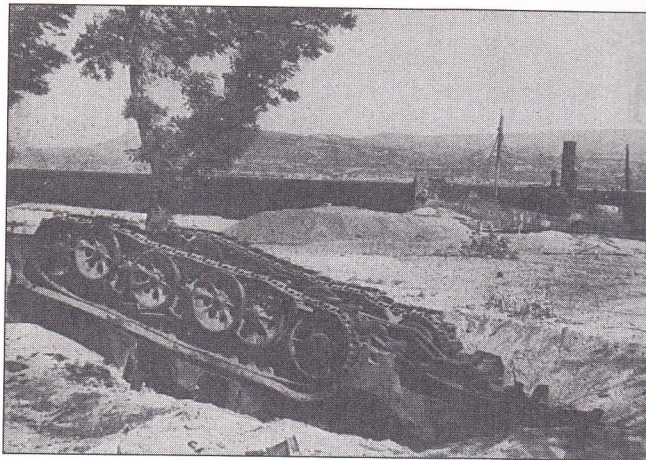
A common early-war German towed weapon which fired a 50mm armor piercing round. This was a similar weapon to the KwK 39 employed in the Panzer III J, but somewhat more powerful.

PaK 39

Another towed weapon which was commonly used from the middle through the end of the war. This was a similar but more powerful weapon than the 75mm KwK 40 employed in the Panzer IV. The PaK 39 was also shoe-horned into the Panzer 38(t) chassis to form the Hetzer tank destroyer.

Flak 88

Originally designed as an anti-aircraft weapon, the excellent ballistic characteristics of the feared "eighty-eight" made it a natural for anti-tank use, a role in which it would serve increasingly throughout the war. The Germans made several attempts to employ this weapon in an armored vehicle, the best of which were the Tiger tanks and the Jagdpanther tank destroyers.



*Final Rest:
Wrecked
German
armor 1945.*

PaK 43

This was a version of the 88 designed to be more easily towed than the somewhat unwieldy Flak gun.

Soviet Anti-tank Guns

Although the Soviet tanks were more than capable of facing German armor, the Red Army deployed its own very effective anti-tank weapons to help fill the gaps.

ZIS-3 Anti-tank Gun

This gun made up the bulk of Soviet light field artillery through most of the war. It was a dual-role gun, capable of delivering both high-explosive and armor-piercing rounds with equal aplomb. Although the Soviets produced larger anti-tank guns, none achieved the success or level of deployment of the ZIS-3.

American Anti-tank Guns

Like the other combatants, American forces were equipped with a variety of anti-tank guns ranging in caliber from 37 to 90 mm, although the following made up the bulk of the American anti-tank armaments deployed in Europe and North Africa.

57 mm Anti-tank Gun

This was virtually a copy of the British 6-pounder and used the same ammunition. In fact, many were provided to the British armed forces under the Lend-Lease program. It was produced from 1942 to 1944, when production was halted due to its inadequacy against the latest German armor.

3-inch Anti-tank Gun

Originally designed as a light artillery piece, this weapon's ballistic characteristics leant itself well to anti-tank use and it was employed in that role from 1942 through the end of the war. This gun also appeared in slightly altered form in the M-10 tank destroyers.

British Anti-tank Guns

The British relied heavily on German armor. The early 2-p in North Africa and British Nonetheless, capable anti-ta following are the best exam

6-Pounder

This is the weapon from wh were first deployed in Nort producing them in quantity.

17-Pounder

Designed from the start as of the most effective British v to graft this gun onto an a "Firefly" and the Comet ap the 17-pounder served with end of the war.

French and Polish Anti-tank

The French anti-tank guns German onslaught. The Fre armor of the day, but the e full potential was realized.

47 mm Anti-tank Gun

Represents one of the sever Polish during the early yea

Airplanes

Airplanes are basically attacks that target a spec bombs on enemies. If th moving, then it is more Airplanes can only be extremely rare circumstan



*Final Rest:
Wrecked
German
armor 1945.*

ore easily towed than the somewhat

ble of facing German armor, the Red
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gh the following made up the bulk of
urope and North Africa.

and used the same ammunition. In
ces under the Lend-Lease program.
tion was halted due to its inadequa-

this weapon's ballistic character-
s employed in that role from 1942
ured in slightly altered form in the

British Anti-tank Guns

The British relied heavily on anti-tank guns to help counter the rapidly-improving German armor. The early 2-pounders were generally ineffective against German tanks in North Africa and British industry was slow to respond with improved weapons. Nonetheless, capable anti-tank weapons did find their way to British troops and the following are the best examples.

6-Pounder

This is the weapon from which the American 57 mm anti-tank gun was copied. These were first deployed in North Africa in 1941, but British industry had some difficulty producing them in quantity, leading to the requirement for the American version.

17-Pounder

Designed from the start as an anti-tank gun, the 17-pounder is recognized as one of the most effective British weapons of the war. Although several attempts were made to graft this gun onto an armored vehicle, it wasn't until 1944 when the Sherman "Firefly" and the Comet appeared that some success was achieved. Nevertheless, the 17-pounder served with distinction as an anti-tank gun from 1943 through the end of the war.

French and Polish Anti-tank Guns

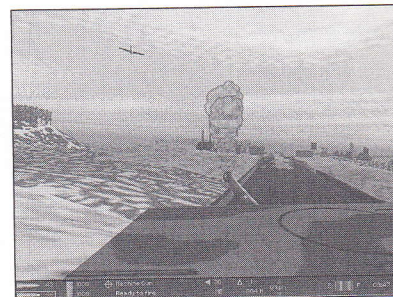
The French anti-tank guns were also used by the Poles in defending against the German onslaught. The French weapons were generally effective against the German armor of the day, but the events of the war would halt their development before their full potential was realized.

47 mm Anti-tank Gun

Represents one of the several types of anti-tank weaponry available to the French and Polish during the early years of the war.

Airplanes

Airplanes are basically off-map artillery attacks that target a specific area and drop bombs on enemies. If the enemy tank is moving, then it is more difficult to hit. Airplanes can only be shot down in extremely rare circumstances.



■ KEYBOARD AND JOYSTICK COMMANDS

Keyboard Commands

The commands given below are the default. The configuration of your keyboard can be set from the Configure Keyboard screen in the Options Menu. Information about this screen can be found on page 25.

Movement

Increase/Decrease Throttle	Up/Down Arrows
Steer Tank Left/Right	Left/Right Arrow Keys
Apply Brakes	Delete
Reverse Direction	End
Set Throttle to Idle	~
Throttle Presets (1 is minimum, 0 is maximum)	1, 2 ... 9, 0

View Control

Rotate View Left/Right	Keypad 1/ Keypad 3
Elevate/Lower View	Keypad 7/ Keypad 9
Zoom View In/Out	Keypad +/-
Center View	C
Switch View to Next Vehicle in Platoon	V
Return View to Player's Tank	R
Chase View (default view until player changes view)	F1
Cupola View, Unbuttoned	F2
Cupola View, Binoculars, Unbuttoned	F3
Cupola View, Buttoned	F4
Driver's View	F5
Gunner's View	F6
Gunner's View, Magnified	F7
Machine Gunner's View (if present)	F8

Targeting and Fire Control

Traverse Current Weapon Left/Right
Elevate/Lower Current Weapon
Center Turret and Release Tracking
Select Next Target
Select Previous Target
Select Nearest Target
Select Target Centered in Gun Sight
Increase Range Finder Setting
Decrease Range Finder Setting
Fire Main Gun (or Machine Gun if in Machine Gun Mode)
Fire Coaxial Machine Gun

Platoon Orders

Cycle Through Formations
Assign Selected Target to Platoon Member
Hold Fire
Engage Enemy (Fire at Will)
Maintain Position

Crew Orders

Order Loader to Change Between Armaments
Order Gunner to Track Target
Order Drive to Proceed to Next Waypoint
Order Driver to Steer in Current View

Miscellaneous

Exit Simulator

S

configuration of your keyboard can
the Options Menu. Information about

Up/Down Arrows
Left/Right Arrow Keys
Delete
End
~
1, 2 ... 9, 0

Keypad 1/ Keypad 3
Keypad 7/ Keypad 9
Keypad +/-

C
V

R

F1

F2

F3

F4

F5

F6

F7

F8

Targeting and Fire Control

Traverse Current Weapon Left/Right	Keypad 4/Keypad 6
Elevate/Lower Current Weapon	Keypad 2/Keypad 8
Center Turret and Release Tracking	Keypad 5
Select Next Target	Tab
Select Previous Target	Caps Lock
Select Nearest Target	N
Select Target Centered in Gun Sight	S
Increase Range Finder Setting	Page Up (non-keypad)
Decrease Range Finder Setting	Page Down (non-keypad)
Fire Main Gun (or Machine Gun if in Machine Gunner's View)	Space Bar
Fire Coaxial Machine Gun	Left Control

Platoon Orders

Cycle Through Formations	F
Assign Selected Target to Platoon Member	Shift-1 or Shift-2
Hold Fire	H
Engage Enemy (Fire at Will)	E
Maintain Position	M

Crew Orders

Order Loader to Change Between AP and HE Rounds	G
Order Gunner to Track Target	T
Order Drive to Proceed to Next Way Point	A
Order Driver to Steer in Current View Direction	D

Miscellaneous

Exit Simulator	Escape
----------------	--------

Joystick Commands

The commands given below are the default. The configuration of your joystick and other controllers can be set from the Configure Controller screen in the Options Menu. Information about this screen can be found on page 25.

Joystick Buttons

Fire Main Gun	Button 1
Toggle Main Gun Ordnance	Button 2
Fire Coaxial Machine Gun	Button 3 (if present)
Track Selected Target	Button 4 (if present)
Select Next Target	Button 5 (if present)
Switch Between Gunner and Previous View	Button 6 (if present)
Rotate/Elevate View (except when in Gunner's View)	Hat (if present)
Increase/Decrease Range Finder Setting (while in Gunner's View)	Hat (if present)

Joystick Axes***Configuration: 2-axis Joystick with no Throttle:***

Steer Tank Left/Right	X-Axis
Throttle	Y-Axis

Configuration: 2-axis Joystick with Throttle:

Steer Tank Left/Right	X-Axis
Throttle Setting	Fixed Throttle Setting

Configuration: 2-axis Joystick with Throttle and Rudder Pedals:

Steer Tank Left/Right	Rudder Pedals
Throttle	Fixed Throttle Setting
Traverse Turret Left/Right	X-Axis
Set Main Gun Elevation	Y-Axis

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World Wide Web: www.ssionline.com (or the game's web page, which is listed in the manual)

Tech Support Fax: (415) 895-2113 **Attn. Technical Support**

Email: ssitechsup@mindscape.com

(please list the game's name as the message's subject)

Telephone: (415) 895-2626 between 8:30 A.M. and 5 P.M., Pacific Time, Monday through Friday, holidays excluded. NO GAME PLAYING HINTS WILL BE GIVEN THROUGH THIS NUMBER.

You can also write to us at: Mindscape, Inc., 88 Rowland Way, Novato, CA 94945, Attention: SSI Technical Support / Dept. 500 (include a self-addressed, stamped envelope for reply).

KEYBOARD COMMANDS

■ MOVEMENT

Increase/Decrease Throttle	Up/Down Arrows	Reverse Direction	End
Steer Tank Left/Right	Left/Right Arrows	Set Throttle to Idle	~
Apply Brakes	Delete	Throttle Presets	1, 2 ... 9, 0 (1 is minimum, 0 is maximum)

■ VIEW CONTROL

Rotate View Left/Right	Keypad 1/Keypad 3	Cupola View, Unbuttoned	F2
Elevate/Lower View	Keypad 7/Keypad 9	Cupola View, Binoculars, Unbuttoned	F3
Zoom View In/Out	Keypad + / -	Cupola View, Buttoned	F4
Center View	C	Driver's View	F5
Switch View to Next Vehicle in Platoon	V	Gunner's View (2.5x)	F6
Return View to Player's Tank	R	Gunner's View, Magnified (5x)	F7
Chase View	F1	Machine Gunner's View (if present)	F8
(default view until player changes view)			

■ TARGETING AND FIRE CONTROL

Traverse Current		Select Nearest Target	N
Weapon Left/Right	Keypad 4/Keypad 6	Select Target Centered in Gun Sight	S
Elevate/Lower		Increase Range Finder Setting	Page Up
Current Weapon	Keypad 2/Keypad 8	Decrease Range Finder Setting	Page Down
Center Turret and		Fire Main Gun or	
Release Tracking	Keypad 5	Machine Gunner's View	Space Bar
Select Next Target	Tab	Fire Coaxial Machine Gun	Left Control
Select Previous Target	Caps Lock	(if present)	

■ PLATOON ORDERS

Cycle Through Formations	F	Engage Enemy (fire at will)	E
Assign Selected Target to		Maintain Position	M
Platoon Member	Shift 1, 2, or 3		
Hold Fire	H		

■ CREW ORDERS

Order Loader to Change		Order Driver to Steer in Current	
Between AP & HE Rounds	G	View Position	D
Order Gunner to Track Target	T		
Order Driver to Next Way Point	A		

■ MISCELLANEOUS

Exit Simulator	Esc
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